

DROPPED FROM THE CLOUDS

JULES VERNE

AUTHOR OF "TWENTY THOUSAND LEAGUES UNDER THE SEA," "AROUND
THE WORLD IN EIGHTY DAYS," "THE FUR COUNTRY," ETC., ETC.

TRANSLATED FROM THE FRENCH BY

W. H. G. KINGSTON



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The Mysterious Island

DROPPED FROM THE CLOUDS.

CHAPTER I.

THE STORM OF 1865—VOICES IN THE AIR—A BALLOON
CARRIED AWAY BY A WHIRLWIND—FIVE PASSEN-
GERS—WHAT HAPPENED IN THE CAR.

"ARE we rising again?" "No. On the contrary." "Are we descending?" "Worse than that, captain! we are falling!" "For Heaven's sake heave out the ballast!" "There! the last sack is empty!" "Does the balloon rise?" "No!" "I hear a noise like the dashing of waves!" "The sea is below the car! It cannot be more than 500 feet from us!" "Overboard with every weight! . . . everything!"

Such were the loud and startling words which resounded through the air, above the vast watery desert of the Pacific, about four o'clock in the evening of the 23rd of March, 1865.

Few can possibly have forgotten the terrible storm from

the north-east, in the middle of the equinox of that year. The tempest raged without intermission from the 18th to the 26th of March. Its ravages were terrible in America, Europe, and Asia, covering a distance of eighteen hundred miles, and extending obliquely to the equator from the thirty-fifth north parallel to the fortieth south parallel. Towns were overthrown, forests uprooted, coasts devastated by the mountains of water which were precipitated on them, vessels cast on the shore, which the published accounts numbered by hundreds, whole districts levelled by waterspouts which destroyed everything they passed over, several thousand people crushed on land or drowned at sea ; such were the traces of its fury, left by this devastating tempest. It surpassed in disasters those which so frightfully ravaged Havannah and Guadaloupe, one on the 25th of October, 1810, the other on the 26th of July, 1825.

But while so many catastrophes were taking place on land and at sea, a drama not less exciting was being enacted in the agitated air.

In fact, a balloon, as a ball might be carried on the summit of a waterspout, had been taken into the circling movement of a column of air and had traversed space at the rate of ninety miles an hour, turning round and round as if seized by some aerial maelstrom.

Beneath the lower point of the balloon, swung a car,

containing five passengers, scarcely visible in the midst of the thick vapour mingled with spray which hung over the surface of the ocean.

Whence, it may be asked, had come that plaything of the tempest? From what part of the world did it rise? It surely could not have started during the storm. But the storm has raged five days already, and the first symptoms were manifested on the 18th. It cannot be doubted that the balloon came from a great distance, for it could not have travelled less than two thousand miles in twenty-four hours.

At any rate the passengers, destitute of all marks for their guidance, could not have possessed the means of reckoning the route traversed since their departure. It was a remarkable fact that, although in the very midst of the furious tempest, they did not suffer from it. They were thrown about and whirled round and round without feeling the rotation in the slightest degree, or being sensible that they were removed from a horizontal position.

Their eyes could not pierce through the thick mist which had gathered beneath the car. Dark vapour was all around them. Such was the density of the atmosphere that they could not be certain whether it was day or night. No reflection of light, no sound from inhabited land, no roaring of the ocean could have reached them, through the obscurity, whilst suspended in those elevated zones. Their rapid

descent alone had informed them of the dangers which they ran from the waves. However, the balloon, lightened of heavy articles, such as ammunition, arms, and provisions, had risen into the higher layers of the atmosphere, to a height of 4500 feet. The voyagers, after having discovered that the sea extended beneath them, and thinking the dangers above less dreadful than those below, did not hesitate to throw overboard even their most useful articles, while they endeavoured to lose no more of that fluid, the life of their enterprise, which sustained them above the abyss.

The night passed in the midst of alarms which would have been death to less energetic souls. Again the day appeared and with it the tempest began to moderate. From the beginning of that day, the 24th of March, it showed symptoms of abating. At dawn, some of the lighter clouds had risen into the more lofty regions of the air. In a few hours the wind had changed from a hurricane to a fresh breeze, that is to say, the rate of the transit of the atmospheric layers was diminished by half. It was still what sailors call "a close-reefed topsail breeze," but the commotion in the elements had not the less considerably diminished.

Towards eleven o'clock, the lower region of the air was sensibly clearer. The atmosphere threw off that chilly dampness which is felt after the passage of a great meteor.

The storm did not seem to have gone further to the west. It appeared to have exhausted itself. Could it have passed away in electric sheets, as is sometimes the case with regard to the typhoons of the Indian Ocean?

But at the same time, it was also evident that the balloon was again slowly descending with a regular movement. It appeared as if it were, little by little, collapsing, and that its case was lengthening and extending, passing from a spherical to an oval form. Towards mid-day the balloon was hovering above the sea at a height of only 2000 feet. It contained 50,000 cubic feet of gas, and, thanks to its capacity, it could maintain itself a long time in the air, although it should reach a great altitude or might be thrown into a horizontal position.

Perceiving their danger, the passengers cast away the last articles which still weighed down the car, the few provisions they had kept, everything, even to their pocket-knives, and one of them, having hoisted himself on to the circles which united the cords of the net, tried to secure more firmly the lower point of the balloon.

It was, however, evident to the voyagers that the gas was failing, and that the balloon could no longer be sustained in the higher regions. They must infallibly perish!

There was not a continent, nor even an island, visible beneath them. The watery expanse did not present a

single speck of land, not a solid surface upon which their anchor could hold.

It was the open sea, whose waves were still dashing with tremendous violence! It was the ocean, without any visible limits, even for those whose gaze, from their commanding position, extended over a radius of forty miles. The vast liquid plain, lashed without mercy by the storm, appeared as if covered with herds of furious chargers, whose white and dishevelled crests were streaming in the wind. No land was in sight, not a solitary ship could be seen. It was necessary at any cost to arrest their downward course, and to prevent the balloon from being engulfed in the waves. The voyagers directed all their energies to this urgent work. But, notwithstanding their efforts, the balloon still fell, it was also suddenly overthrown, following the direction of the wind, that is to say, from the north-east to the south-west.

Frightful indeed was the situation of these unfortunate men. They were evidently no longer masters of the machine. All their attempts were useless. The case of the balloon collapsed more and more. The gas escaped without any possibility of retaining it. Their descent was visibly accelerated, and soon after mid-day the car hung within 600 feet of the ocean.

It was impossible to prevent the escape of gas, which rushed through a large rent in the silk. By lightening the

car of all the articles which it contained, the passengers had been able to prolong their suspension in the air for a few hours. But the inevitable catastrophe could only be retarded, and if land did not appear before night, voyagers, car, and balloon must to a certainty vanish beneath the waves.

They now resorted to the only remaining expedient. They were truly dauntless men, who knew how to look death in the face. Not a single murmur escaped from their lips. They were determined to struggle to the last minute, to do anything to retard their fall. The car was only a sort of willow basket, unable to float, and there was not the slightest possibility of maintaining it on the surface of the sea.

Two more hours passed and the balloon was scarcely 400 feet above the water.

At that moment a loud voice, the voice of a man whose heart was inaccessible to fear, was heard. To this voice responded others not less determined. "Is everything thrown out?" "No, here are still 2000 dollars in gold." A heavy bag immediately plunged into the sea. "Does the balloon rise?" "A little, but it will not be long before it falls again." "What still remains to be thrown out?" "Nothing." "Yes! the car!" "Let us catch hold of the net, and into the sea with the car."

This was, in fact, the last and only mode of lightening
B

the balloon. The ropes which held the car were cut, and the balloon, after its fall, mounted 2000 feet.

The five voyagers had hoisted themselves into the net, and clung to the meshes, gazing at the abyss.

The delicate sensibility of balloons is well known. It is sufficient to throw out the lightest article to produce a difference in its vertical position. The apparatus in the air is like a balance of mathematical precision. It can be thus easily understood that when it is lightened of any considerable weight its movement will be impetuous and sudden. So it happened on this occasion. But after being suspended for an instant aloft, the balloon began to redescend, the gas escaping by the rent which it was impossible to repair.

The men had done all that men could do. No human efforts could save them now. They must trust to the mercy of Him who rules the elements.

At four o'clock the balloon was only 500 feet above the surface of the water.

A loud barking was heard. A dog accompanied the voyagers, and was held pressed close to his master in the meshes of the net.

"Top has seen something," cried one of the men. Then immediately a loud voice shouted,—

"Land! land!" The balloon, which the wind still drove towards the south-west, had since daybreak gone a con-

siderable distance, which might be reckoned by hundreds of miles, and a tolerably high land had, in fact, appeared in that direction. But this land was still thirty miles off. It would not take less than an hour to get to it, and then there was the chance of falling to leeward.

An hour! Might not the balloon before that be emptied of all the fluid it yet retained?

Such was the terrible question! The voyagers could distinctly see that solid spot which they must reach at any cost. They were ignorant of what it was, whether an island or a continent, for they did not know to what part of the world the hurricane had driven them. But they must reach this land, whether inhabited or desolate, whether hospitable or not.

It was evident that the balloon could no longer support itself! Several times already had the crests of the enormous billows licked the bottom of the net, making it still heavier, and the balloon only half rose, like a bird with a wounded wing. Half an hour later the land was not more than a mile off, but the balloon, exhausted, flabby, hanging in great folds, had gas in its upper part alone. The voyagers, clinging to the net, were still too heavy for it, and soon, half plunged in the sea, they were beaten by the furious waves. The balloon-case bulged out again, and the wind, taking it, drove it along like a vessel. Might it not possibly thus reach the land?

But, when only two fathoms off, terrible cries resounded from four pairs of lungs at once. The balloon, which had appeared as if it would never again rise, suddenly made an unexpected bound, after having been struck by a tremendous sea. As if it had been at that instant relieved of a new part of its weight, it mounted to a height of 1500 feet, and there it met a current of wind, which instead of taking it directly to the coast, carried it in a nearly parallel direction.

At last, two minutes later, it reapproached obliquely, and finally fell on a sandy beach, out of the reach of the waves.

The voyagers, aiding each other, managed to disengage themselves from the meshes of the net. The balloon, relieved from their weight, was taken by the wind, and like a wounded bird which revives for an instant, disappeared into space.

But the car had contained five passengers, with a dog, and the balloon only left four on the shore.

The missing person had evidently been swept off by the sea, which had just struck the net, and it was owing to this circumstance that the lightened balloon rose the last time, and then soon after reached the land. Scarcely had the four castaways set foot on firm ground, than they all, thinking of the absent one, simultaneously exclaimed, "Perhaps he will try to swim to land! Let us save him! let us save him!"

CHAPTER II.

AN INCIDENT IN THE WAR OF SECESSION—THE ENGINEER CYRUS HARDING—GIDEON SPILETT—THE NEGRO NEB—PENCROFT THE SAILOR—THE NIGHT RENDEZVOUS—DEPARTURE IN THE STORM.

THOSE whom the hurricane had just thrown on this coast were neither aeronauts by profession nor amateurs. They were prisoners of war whose boldness had induced them to escape in this extraordinary manner.

A hundred times they had almost perished ! A hundred times had they almost fallen from their torn balloon into the depths of the ocean. But Heaven had reserved them for a strange destiny, and after having, on the 20th of March, escaped from Richmond, besieged by the troops of General Ulysses Grant, they found themselves seven thousand miles from the capital of Virginia, which was the principal stronghold of the south, during the terrible war of Secession. Their aerial voyage had lasted five days.

The curious circumstances which led to the escape of the prisoners were as follows :—

That same year, in the month of February, 1865, in one of the coups-de-main by which General Grant attempted, though in vain, to possess himself of Richmond, several of his officers fell into the power of the enemy and were detained in the town. One of the most distinguished was Captain Cyrus Harding. He was a native of Massachusetts, a first-class engineer, to whom the government had confided, during the war, the direction of the railways, which were so important at that time. A true Northerner, thin, bony, lean, about forty-five years of age ; his close-cut hair and his beard, of which he only kept a thick moustache, were already getting grey. He had one of those finely-developed heads which appear made to be struck on a medal, piercing eyes, a serious mouth, the physiognomy of a clever man of the military school. He was one of those engineers who began by handling the hammer and pickaxe, like generals who first act as common soldiers. Besides mental power, he also possessed great manual dexterity. His muscles exhibited remarkable proofs of tenacity. A man of action as well as a man of thought, all he did was without effort to one of his vigorous and sanguine temperament. Learned, clear-headed, and practical, he fulfilled in all emergencies those three conditions which united ought to insure human success,—

activity of mind and body, impetuous wishes, and powerful will. He might have taken for his motto that of William of Orange in the 17th century: "I can undertake and persevere even without hope of success." Cyrus Harding was courage personified. He had been in all the battles of that war. After having begun as a volunteer at Illinois, under Ulysses Grant, he fought at Paduah, Belmont, Pittsburg Landing, at the siege of Corinth, Port Gibson, Black River, Chatanoga, Wilderness, Potomac, everywhere and valiantly, a soldier worthy of the general who said, "I never count my dead!" And hundreds of times Captain Harding had almost been among those who were not counted by the terrible Grant; but in these combats where he never spared himself, fortune favoured him till the moment when he was wounded and taken prisoner on the field of battle near Richmond. At the same time and on the same day another important personage fell into the hands of the Southerners. This was no other than Gideon Spilett, a reporter for the *New York Herald*, who had been ordered to follow the changes of the war in the midst of the northern armies.

Gideon Spilett was one of that race of indomitable English or American chroniclers, like Stanley and others, who stop at nothing to obtain exact information, and transmit it to their journal in the shortest possible time. The newspapers of the Union, such as the *New York*

Herald, are formed of actual powers, and their reporters are their representatives. Gideon Spilett ranked among the first of those reporters: a man of great merit, energetic, prompt and ready for anything, full of ideas, having travelled over the whole world, soldier and artist, enthusiastic in council, resolute in action, caring neither for trouble, fatigue, nor danger, when in pursuit of information, for himself first, and then for his journal, a perfect treasury of knowledge on all sorts of curious subjects, of the unpublished, of the unknown, and of the impossible. He was one of those intrepid observers who write under fire, "reporting" amongst bullets, and to whom every danger is welcome.

He also had been in all the battles, in the first rank, revolver in one hand, note-book in the other; grape-shot never made his pencil tremble. He did not fatigue the wires with incessant telegrams, like those who speak when they have nothing to say, but each of his notes, short, decisive, and clear, threw light on some important point. Besides, he was not wanting in humour. It was he who, after the affair of the Black River, determined at any cost to keep his place at the wicket of the telegraph office, and after having announced to his journal the result of the battle, telegraphed for two hours the first chapters of the Bible. It cost the *New York Herald* two thousand dollars, but the *New York Herald* published the first intelligence.

Gideon Spilett was tall. He was rather more than forty years of age. Light whiskers bordering on red surrounded his face. His eye was steady, lively, rapid in its changes. It was the eye of a man accustomed to take in at a glance all the details of a scene. Well built, he was inured to all climates, like a bar of steel hardened in cold water.

For ten years Gideon Spilett had been the reporter of the *New York Herald*, which he enriched by his letters and drawings, for he was as skilful in the use of the pencil as of the pen. When he was captured, he was in the act of making a description and sketch of the battle. The last words in his note-book were these: "A Southern rifleman has just taken aim at me, but—" The Southerner notwithstanding missed Gideon Spilett, who, with his usual fortune, came out of this affair without a scratch.

Cyrus Harding and Gideon Spilett, who did not know each other except by reputation, had both been carried to Richmond. The engineer's wounds rapidly healed, and it was during his convalescence that he made acquaintance with the reporter. The two men then learned to appreciate each other. Soon their common aim had but one object, that of escaping, rejoining Grant's army, and fighting together in the ranks of the Federals.

The two Americans had from the first determined to seize every chance; but although they were allowed to wander at liberty in the town, Richmond was so strictly

guarded, that escape appeared impossible. In the meanwhile Captain Harding was rejoined by a servant who was devoted to him in life and in death. This intrepid fellow was a negro born on the engineer's estate, of a slave father and mother, but to whom Cyrus, who was an Abolitionist from conviction and heart, had long since given his freedom. The once slave, though free, would not leave his master. He would have died for him. He was a man of about thirty, vigorous, active, clever, intelligent, gentle, and calm, sometimes naive, always merry, obliging, and honest. His name was Nebuchadnezzar, but he only answered to the familiar abbreviation of Neb.

When Neb heard that his master had been made prisoner, he left Massachusetts without hesitating an instant, arrived before Richmond, and by dint of stratagem and shrewdness, after having risked his life twenty times over, managed to penetrate into the besieged town. The pleasure of Harding on seeing his servant, and the joy of Neb at finding his master, can scarcely be described.

But though Neb had been able to make his way into Richmond, it was quite another thing to get out again, for the Northern prisoners were very strictly watched. Some extraordinary opportunity was needed to make the attempt with any chance of success, and this opportunity not only did not present itself, but was very difficult to find.

Meanwhile Grant continued his energetic operations.

The victory of Petersburg had been very dearly bought. His forces, united to those of Butler, had as yet been unsuccessful before Richmond, and nothing gave the prisoners any hope of a speedy deliverance.

The reporter, to whom his tedious captivity did not offer a single incident worthy of note, could stand it no longer. His usually active mind was occupied with one sole thought—how he might get out of Richmond at any cost. Several times had he even made the attempt, but was stopped by some insurmountable obstacle. However, the siege continued; and if the prisoners were anxious to escape and join Grant's army, certain of the besieged were no less anxious to join the Southern forces. Amongst them was one Jonathan Forster, a determined Southerner. The truth was, that if the prisoners of the Secessionists could not leave the town, neither could the Secessionists themselves while the Northern army invested it. The Governor of Richmond for a long time had been unable to communicate with General Lee, and he very much wished to make known to him the situation of the town, so as to hasten the march of the army to their relief. This Jonathan Forster accordingly conceived the idea of rising in a balloon, so as to pass over the besieging lines, and in that way reach the Secessionist camp.

The Governor authorized the attempt. A balloon was manufactured and placed at the disposal of Forster, who

was to be accompanied by five other persons. They were furnished with arms in case they might have to defend themselves when they alighted, and provisions in the event of their aerial voyage being prolonged.

The departure of the balloon was fixed for the 18th of March. It should be effected during the night, with a north-west wind of moderate force, and the aeronauts calculated that they would reach General Lee's camp in a few hours.

But this north-west wind was not a simple breeze. From the 18th it was evident that it was changing to a hurricane. The tempest soon became such that Forster's departure was deferred, for it was impossible to risk the balloon and those whom it carried in the midst of the furious elements.

The balloon, inflated on the great square of Richmond, was ready to depart on the first abatement of the wind, and, as may be supposed, the impatience among the besieged to see the storm moderate was very great.

The 18th, the 19th of March passed without any alteration in the weather. There was even great difficulty in keeping the balloon fastened to the ground, as the squalls dashed it furiously about.

The night of the 19th passed, but the next morning the storm blew with redoubled force. The departure of the balloon was impossible.

On that day the engineer, Cyrus Harding, was accosted in one of the streets of Richmond by a person whom he did not in the least know. This was a sailor named Pencroft, a man of about thirty-five or forty years of age, strongly built, very sunburnt, and possessed of a pair of bright sparkling eyes and a remarkably good physiognomy. Pencroft was an American from the North, who had sailed all the ocean over, and who had gone through every possible and almost impossible adventure that a being with two feet and no wings could encounter. It is needless to say that he was a bold, dashing fellow, ready to dare anything and was astonished at nothing. Pencroft at the beginning of the year had gone to Richmond on business, with a young boy of fifteen from New Jersey, son of a former captain, an orphan, whom he loved as if he had been his own child. Not having been able to leave the town before the first operations of the siege, he found himself shut up, to his great disgust; but, not accustomed to succumb to difficulties, he resolved to escape by some means or other. He knew the engineer-officer by reputation; he knew with what impatience that determined man chafed under his restraint. On this day he did not, therefore, hesitate to accost him, saying, without circumlocution, "Have you had enough of Richmond, captain?"

The engineer looked fixedly at the man who spoke, and who added, in a low voice,—

"Captain Harding, will you try to escape?"

"When?" asked the engineer quickly, and it was evident that this question was uttered without consideration, for he had not yet examined the stranger who addressed him. But after having with a penetrating eye observed the open face of the sailor, he was convinced that he had before him an honest man.

"Who are you?" he asked briefly.

Pencroft made himself known.

"Well," replied Harding, "and in what way do you propose to escape?"

"By that lazy balloon which is left there doing nothing, and which looks to me as if it was waiting on purpose for us—"

There was no necessity for the sailor to finish his sentence. The engineer understood him at once. He seized Pencroft by the arm, and dragged him to his house. There the sailor developed his project, which was indeed extremely simple. They risked nothing but their lives in its execution. The hurricane was in all its violence, it is true, but so clever and daring an engineer as Cyrus Harding, knew perfectly well how to manage a balloon. Had he himself been as well acquainted with the art of sailing in the air as he was with the navigation of a ship, Pencroft would not have hesitated to set out, of course taking his young friend Herbert with him; for, accustomed

to brave the fiercest tempests of the ocean, he was not to be hindered on account of the hurricane.

Captain Harding had listened to the sailor without saying a word, but his eyes shone with satisfaction. Here was the long-sought-for opportunity,—he was not a man to let it pass. The plan was feasible, though, it must be confessed, dangerous in the extreme. In the night, in spite of their guards, they might approach the balloon, slip into the car, and then cut the cords which held it. There was no doubt that they might be killed, but on the other hand they might succeed, and without this storm!—Without this storm the balloon would have started already, and the looked-for opportunity would not have then presented itself.

“I am not alone!” said Harding at last.

“How many people do you wish to bring with you?” asked the sailor.

“Two; my friend Spilett, and my servant Neb.”

“That will be three,” replied Pencroft; “and with Herbert and me five. But the balloon will hold six—”

“That will be enough, we will go,” answered Harding in a firm voice.

This “we” included Spilett, for the reporter, as his friend well knew, was not a man to draw back, and when the project was communicated to him he approved of it unreservedly. What astonished him was, that so simple

an idea had not occurred to him before. As to Neb, he followed his master wherever his master wished to go.

"This evening, then," said Pencroft, "we will all meet out there."

"This evening, at ten o'clock," replied Captain Harding; "and Heaven grant that the storm does not abate before our departure."

Pencroft took leave of the two friends, and returned to his lodging, where young Herbert Brown had remained. The courageous boy knew of the sailor's plan, and it was not without anxiety that he awaited the result of the proposal being made to the engineer. Thus five determined persons were about to abandon themselves to the mercy of the tempestuous elements!

No! the storm did not abate, and neither Jonathan Forster nor his companions dreamt of confronting it in that frail car.

It would be a terrible journey. The engineer only feared one thing, it was that the balloon, held to the ground and dashed about by the wind, would be torn into shreds. For several hours he roamed round the nearly-deserted square, surveying the apparatus. Pencroft did the same on his side, his hands in his pockets, yawning now and then like a man who did not know how to kill the time, but really dreading, like his friend, either the escape or destruction of the balloon.

Evening arrived. The night was dark in the extreme. Thick mists passed like clouds close to the ground. Rain fell mingled with snow. It was very cold. A mist hung over Richmond. It seemed as if the violent storm had produced a truce between the besiegers and the besieged, and that the cannon were silenced by the louder detonations of the storm. The streets of the town were deserted. It had not even appeared necessary in that horrible weather to place a guard in the square, in the midst of which plunged the balloon. Everything favoured the departure of the prisoners, but what might possibly be the termination of the hazardous voyage they contemplated in the midst of the furious elements?—

“Dirty weather!” exclaimed Pencroft, fixing his hat firmly on his head with a blow of his fist; “but pshaw, we shall succeed all the same!”

At half-past nine, Harding and his companions glided from different directions into the square, which the gas-lamps, extinguished by the wind, had left in total obscurity. Even the enormous balloon, almost beaten to the ground, could not be seen. Independently of the sacks of ballast, to which the cords of the net were fastened, the car was held by a strong cable passed through a ring in the pavement. The five prisoners met by the car. They had not been perceived, and such was the darkness that they could not even see each other.

Without speaking a word, Harding, Spilett, Neb, and Herbert, took their places in the car, whilst Pencroft by the engineer's order detached successively the bags of ballast. It was the work of a few minutes only, and the sailor rejoined his companions.

The balloon was then only held by the cable, and the engineer had nothing to do but to give the word.

At that moment a dog sprang with a bound into the car. It was Top, a favourite of the engineer. The faithful creature, having broken his chain, had followed his master. He, however, fearing that its additional weight might impede their ascent, wished to send away the animal.

"One more will make but little difference, poor beast!" exclaimed Pencroft, heaving out two bags of sand, and as he spoke letting go the cable; the balloon ascending in an oblique direction, disappeared, after having dashed the car against two chimneys, which it threw down as it swept by them.

Then, indeed, the full rage of the hurricane was exhibited to the voyagers. During the night the engineer could not dream of descending, and when day broke, even a glimpse of the earth below was intercepted by fog.

Five days had passed when a partial clearing allowed them to see the wide extending ocean beneath their feet, now lashed into the maddest fury by the gale.

Our readers will recollect what befell these five daring

individuals who set out on their hazardous expedition in the balloon on the 20th of March. Five days afterwards four of them were thrown on a desert coast, seven thousand miles from their country! But one of their number was missing, the man who was to be their guide, their leading spirit, the engineer, Captain Harding! The instant they had recovered their feet, they all hurried to the beach in the hopes of rendering him assistance.¹

¹ On the 5th of April Richmond fell into the hands of Grant; the revolt of the Secessionists was suppressed, Lee retreated to the West, and the cause of the Federals triumphed.

CHAPTER III.

FIVE O'CLOCK IN THE EVENING—THE MISSING ONE—
NEB'S DESPAIR—SEARCH TOWARDS THE NORTH—
THE ISLET—A DREADFUL NIGHT—A FOG IN THE
MORNING—NEB SWIMS—SIGHT OF LAND—FORDING
THE CHANNEL.

THE engineer, the meshes of the net having given way, had been carried off by a wave. His dog also had disappeared. The faithful animal had voluntarily leaped out to help his master. "Forward," cried the reporter; and all four, Spilett, Herbert, Pencroft, and Neb, forgetting their fatigue, began their search. Poor Neb shed bitter tears, giving way to despair at the thoughts of having lost the only being he loved on earth.

Only two minutes had passed from the time when Cyrus Harding disappeared to the moment when his companions set foot on the ground. They had hopes therefore of arriving

in time to save him. "Let us look for him ! let us look for him !" cried Neb.

"Yes, Neb," replied Gideon Spilett, "and we will find him too !"

"Living, I trust !"

"Still living !"

"Can he swim ?" asked Pencroft.

"Yes," replied Neb, "and besides, Top is there."

The sailor, observing the heavy surf on the shore, shook his head.

The engineer had disappeared to the north of the shore, and nearly half a mile from the place where the castaways had landed. The nearest point of the beach he could reach was thus fully that distance off.

It was then nearly six o'clock. A thick fog made the night very dark. The castaways proceeded towards the north of the land on which chance had thrown them, an unknown region, the geographical situation of which they could not even guess. They were walking upon a sandy soil, mingled with stones, which appeared destitute of any sort of vegetation. The ground, very unequal and rough, was in some places perfectly riddled with holes, making walking extremely painful. From these holes escaped every minute great birds of clumsy flight, which flew in all directions. Others, more active, rose in flocks and passed in clouds over their heads. The sailor thought he

recognized gulls and cormorants, whose shrill cries rose above the roaring of the sea.

From time to time the castaways stopped and shouted, then listened for some response from the ocean, for they thought that if the engineer had landed, and they had been near to the place, they would have heard the barking of the dog Top, even should Harding himself have been unable to give any sign of existence. They stopped to listen, but no sound arose above the roaring of the waves and the dashing of the surf. The little band then continued their march forward, searching into every hollow of the shore.

After walking for twenty minutes, the four castaways were suddenly brought to a standstill by the sight of foaming billows close to their feet. The solid ground ended here. They found themselves at the extremity of a sharp point on which the sea broke furiously.

"It is a promontory," said the sailor; "we must retrace our steps, holding towards the right, and we shall thus gain the mainland."

"But if he is there," said Neb, pointing to the ocean, whose waves shone of a snowy white in the darkness. "Well, let us call again," and all uniting their voices, they gave a vigorous shout, but there came no reply. They waited for a lull, then began again; still no reply.

The castaways accordingly returned, following the oppo-

site side of the promontory, over a soil equally sandy and rugged. However, Pencroft observed that the shore was more equal, that the ground rose, and he declared that it was joined by a long slope to a hill, whose massive front he thought that he could see looming indistinctly through the mist. The birds were less numerous on this part of the shore; the sea was also less tumultuous, and they observed that the agitation of the waves was diminished. The noise of the surf was scarcely heard. This side of the promontory evidently formed a semi-circular bay, which the sharp point sheltered from the breakers of the open sea. But to follow this direction was to go south, exactly opposite to that part of the coast where Harding might have landed. After a walk of a mile and a half, the shore presented no curve which would permit them to return to the north. This promontory, of which they had turned the point, must be attached to the mainland. The castaways, although their strength was nearly exhausted, still marched courageously forward, hoping every moment to meet with a sudden angle which would set them in the first direction. What was their disappointment, when, after trudging nearly two miles, having reached an elevated point composed of slippery rocks, they found themselves again stopped by the sea.

“We are on an islet,” said Pencroft, “and we have surveyed it from one extremity to the other.”

The sailor was right; they had been thrown, not on a continent, not even on an island, but on an islet which was not more than two miles in length, with even a less breadth.

Was this barren spot the desolate refuge of sea-birds, strewn with stones and destitute of vegetation, attached to a more important archipelago? It was impossible to say. When the voyagers from their car saw the land through the mist, they had not been able to reconnoitre it sufficiently. However, Pencroft, accustomed with his sailor eyes to pierce through the gloom, was almost certain that he could clearly distinguish in the west confused masses which indicated an elevated coast. But they could not in the dark determine whether it was a single island, or connected with others. They could not leave it either, as the sea surrounded them; they must therefore put off till the next day their search for the engineer, from whom, alas! not a single cry had reached them to show that he was still in existence.

"The silence of our friend proves nothing," said the reporter. "Perhaps he has fainted or is wounded, and unable to reply directly, so we will not despair."

The reporter then proposed to light a fire on a point of the islet, which would serve as a signal to the engineer. But they searched in vain for wood or dry brambles; nothing but sand and stones were to be found. The grief of Neb and his companions, who were all strongly attached

to the intrepid Harding, can be better pictured than described. It was too evident that they were powerless to help him. They must wait with what patience they could for daylight. Either the engineer had been able to save himself, and had already found a refuge on some point of the coast, or he was lost for ever! The long and painful hours passed by. The cold was intense. The castaways suffered cruelly, but they scarcely perceived it. They did not even think of taking a minute's rest. Forgetting everything but their chief, hoping or wishing to hope on, they continued to walk up and down on this sterile spot, always returning to its northern point, where they could approach nearest to the scene of the catastrophe. They listened, they called, and then uniting their voices, they endeavoured to raise even a louder shout than before, which would be transmitted to a great distance. The wind had now fallen almost to a calm, and the noise of the sea began also to subside. One of Neb's shouts even appeared to produce an echo. Herbert directed Pencroft's attention to it, adding, "That proves that there is a coast to the west, at no great distance." The sailor nodded; besides, his eyes could not deceive him. If he had discovered land, however indistinct it might appear, land was sure to be there. But that distant echo was the only response produced by Neb's shouts, while a heavy gloom hung over all the part east of the island.

Meanwhile, the sky was clearing little by little. Towards midnight the stars shone out, and if the engineer had been there with his companions he would have remarked that these stars did not belong to the Northern hemisphere. The polar star was not visible, the constellations were not those which they had been accustomed to see in the United States; the Southern Cross glittered brightly in the sky.

The night passed away. Towards five o'clock in the morning of the 25th of March, the sky began to lighten; the horizon still remained dark, but with daybreak a thick mist rose from the sea, so that the eye could scarcely penetrate beyond twenty feet or so from where they stood. At length the fog gradually unrolled itself in great heavily moving waves.

It was unfortunate, however, that the castaways could distinguish nothing around them. Whilst the gaze of the reporter and Neb were cast upon the ocean, the sailor and Herbert looked eagerly for the coast in the west. But not a speck of land was visible. "Never mind," said Pencroft, "though I do not see the land, I feel it . . . it is there . . . there . . . as sure as the fact that we are no longer at Richmond." But the fog was not long in rising. It was only a fine-weather mist. A hot sun soon penetrated to the surface of the island. About half-past six, three-quarters of an hour after sunrise, the mist became

more transparent. It grew thicker above, but cleared away below. Soon the isle appeared as if it had descended from a cloud, then the sea showed itself around them, spreading far away towards the east, but bounded on the west by an abrupt and precipitous coast.

Yes! the land was there. Their safety was at least provisionally insured. The islet and the coast were separated by a channel about half a mile in breadth, through which rushed an extremely rapid current.

However, one of the castaways, following the impulse of his heart, immediately threw himself into the current, without consulting his companions, without saying a single word. It was Neb. He was in haste to be on the other side, and to climb towards the north. It had been impossible to hold him back. Pencroft called him in vain. The reporter prepared to follow him, but Pencroft stopped him. "Do you want to cross the channel?" he asked. "Yes," replied Spilett. "All right!" said the seaman; "wait a bit; Neb is well able to carry help to his master. If we venture into the channel, we risk being carried into the open sea by the current, which is running very strong; but, if I'm not wrong, it is ebbing. See, the tide is going down over the sand. Let us have patience, and at low water it is possible we may find a fordable passage." "You are right," replied the reporter, "we will not separate more than we can help."

During this time Neb was struggling vigorously against the current. He was crossing in an oblique direction. His black shoulders could be seen emerging at each stroke. He was carried down very quickly, but he also made way towards the shore. It took more than half an hour to cross from the islet to the land, and he reached the shore several hundred feet from the place which was opposite to the point from which he had started.

Landing at the foot of a high wall of granite, he shook himself vigorously; and then, setting off running, soon disappeared behind a rocky point, which projected to nearly the height of the northern extremity of the islet.

Neb's companions had watched his daring attempt with painful anxiety, and when he was out of sight, they fixed their attention on the land where their hope of safety lay, whilst eating some shell-fish with which the sand was strewn. It was a wretched repast, but still it was better than nothing. The opposite coast formed one vast bay, terminating on the south by a very sharp point, which was destitute of all vegetation, and was of a very wild aspect. This point abutted on the shore in a grotesque outline of high granite rocks. Towards the north, on the contrary, the bay widened, and a more rounded coast appeared, trending from the south-west to the north-east, and terminating in a slender cape. The distance between these

two extremities, which made the bow of the bay, was about eight miles. Half a mile from the shore rose the islet, which somewhat resembled the carcass of a gigantic whale. Its extreme breadth was not more than a quarter of a mile.

Opposite the islet, the beach consisted first of sand, covered with black stones, which were now appearing little by little above the retreating tide. The second level was separated by a perpendicular granite cliff, terminated at the top by an unequal edge at a height of at least 300 feet. It continued thus for a length of three miles, ending suddenly on the right with a precipice which looked as if cut by the hand of man. On the left, above the promontory, this irregular and jagged cliff descended by a long slope of conglomerate rocks till it mingled with the ground of the southern point. On the upper plateau of the coast not a tree appeared. It was a flat table-land like that above Cape Town at the Cape of Good Hope, but of reduced proportions; at least so it appeared seen from the islet. However, verdure was not wanting to the right beyond the precipice. They could easily distinguish a confused mass of great trees, which extended beyond the limits of their view. This verdure relieved the eye, so long wearied by the continued ranges of granite. Lastly, beyond and above the plateau, in a north-westerly direction and at a distance of at least seven miles, glittered a white

summit which reflected the sun's rays. It was that of a lofty mountain, capped with snow.

The question could not at present be decided whether this land formed an island, or whether it belonged to a continent. But on beholding the convulsed masses heaped up on the left, no geologist would have hesitated to give them a volcanic origin, for they were unquestionably the work of subterranean convulsions.

Gideon Spilett, Pencroft, and Herbert attentively examined this land, on which they might perhaps have to live many long years; on which indeed they might even die, should it be out of the usual track of vessels, as was too likely to be the case.

"Well," asked Herbert, "what do you say, Pencroft?"

"There is some good and some bad, as in everything," replied the sailor. "We shall see. But now the ebb is evidently making. In three hours we will attempt the passage, and once on the other side we will try to get out of this scrape, and I hope may find the captain." Pencroft was not wrong in his anticipations. Three hours later at low tide, the greater part of the sand forming the bed of the channel was uncovered. Between the islet and the coast there only remained a narrow channel which would no doubt be easy to cross.

About ten o'clock, Gideon Spilett and his companions stripped themselves of their clothes, which they placed in

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CHAPTER IV.

LITHODOMES—THE RIVER'S MOUTH—THE CHIMNEYS—
CONTINUED RESEARCHES—THE FOREST OF EVER-
GREENS—WAITING FOR THE EBB—ON THE HEIGHTS
—THE RAFT—RETURN TO THE SHORE.

ALL at once the reporter sprang up, and telling the sailor that he would rejoin them at that same place, he climbed the cliff in the direction which the negro Neb had taken a few hours before. Anxiety hastened his steps, for he longed to obtain news of his friend, and he soon disappeared round an angle of the cliff. Herbert wished to accompany him.

"Stop here, my boy," said the sailor; "we have to prepare an encampment, and to try and find rather better grub than these shell-fish. Our friends will want something when they come back. There is work for everybody."

"I am ready," replied Herbert.

"All right," said the sailor; "that will do. We must set about it regularly. We are tired, cold, and hungry; therefore we must have shelter, fire, and food. There is wood in the forest, and eggs in nests; we have only to find a house."

"Very well," returned Herbert, "I will look for a cave amongst the rocks, and I shall be sure to discover some hole into which we can creep."

"All right," said Pencroft; "go on, my boy."

They both walked to the foot of the enormous wall over the beach, far from which the tide had now retreated; but instead of going towards the north, they went southwards. Pencroft had remarked, several hundred feet from the place at which they landed, a narrow cutting, out of which he thought a river or stream might issue. Now, on the one hand it was important to settle themselves in the neighbourhood of a good stream of water, and on the other it was possible that the current had thrown Cyrus Harding on the shore there.

The cliff, as has been said, rose to a height of three hundred feet, but the mass was unbroken throughout, and even at its base, scarcely washed by the sea, it did not offer the smallest fissure which would serve as a dwelling. It was a perpendicular wall of very hard granite, which even the waves had not worn away. Towards the summit fluttered myriads of sea-fowl, and especially those of the

web-footed species, with long, flat, pointed beaks—a clamorous tribe, bold in the presence of man, who probably for the first time thus invaded their domains. Pencroft recognized the skua and other gulls among them, the voracious little sea-mew, which in great numbers nestled in the crevices of the granite. A shot fired among this swarm would have killed a great number, but to fire a shot a gun was needed, and neither Pencroft nor Herbert had one; besides this, gulls and sea-mews are scarcely eatable, and even their eggs have a detestable taste. However, Herbert who had gone forward a little more to the left, soon came upon rocks covered with sea-weed, which, some hours later, would be hidden by the high tide. On these rocks, in the midst of slippery wrack, abounded bivalve shell-fish, not to be despised by starving people. Herbert called Pencroft, who ran up hastily.

“Why! here are mussels?” cried the sailor; “these will do instead of eggs!”

“They are not mussels,” replied Herbert, who was attentively examining the molluscs attached to the rocks; “they are lithodomes.”

“Are they good to eat?” asked Pencroft.

“Perfectly so.”

“Then let us eat some lithodomes.”

The sailor could rely upon Herbert; the young boy was well up in natural history, and always had had quite a

passion for the science. His father had encouraged him in it, by letting him attend the lectures of the best professors in Boston, who were very fond of the intelligent, industrious lad. And this turn for natural history was, more than once in the course of time, of great use, and he was not mistaken in this instance. These lithodomes were oblong shells, suspended in clusters and adhering very tightly to the rocks. They belong to that species of molluscous perforators which excavate holes in the hardest stones; their shell is rounded at both ends, a feature which is not remarked in the common mussel.

Pencroft and Herbert made a good meal of the lithodomes, which were then half opened to the sun. They ate them as oysters, and as they had a strong peppery taste, they were palatable without condiments of any sort.

Their hunger was thus appeased for the time, but not their thirst, which increased after eating these naturally-spiced molluscs. They had then to find fresh water, and it was not likely that it would be wanting in such a capriciously uneven region. Pencroft and Herbert, after having taken the precaution of collecting an ample supply of lithodomes, with which they filled their pockets and handkerchiefs, regained the foot of the cliff.

Two hundred paces farther they arrived at the cutting, through which, as Pencroft had guessed, ran a stream of water, whether fresh or not was to be ascertained. At this

place the wall appeared to have been separated by some violent subterranean force. At its base was hollowed out a little creek, the farthest part of which formed a tolerably sharp angle. The watercourse at that part measured 100 feet in breadth, and its two banks on each side were scarcely twenty feet high. The river became strong almost directly between the two walls of granite, which began to sink above the mouth; it then suddenly turned and disappeared beneath a wood of stunted trees half a mile off.

"Here is the water, and yonder is the wood we require!" said Pencroft. "Well, Herbert, now we only want the house."

The water of the river was limpid. The sailor ascertained that at this time—that is to say, at low tide, when the rising floods did not reach it—it was sweet. This important point established, Herbert looked for some cavity which would serve them as a retreat, but in vain; everywhere the wall appeared smooth, plain, and perpendicular.

However, at the mouth of the watercourse and above the reach of the high tide, the convulsions of nature had formed, not a grotto, but a pile of enormous rocks, such as are often met with in granite countries and which bear the name of "Chimneys."

Pencroft and Herbert penetrated quite far in amongst the rocks, by sandy passages in which light was not

wanting, for it entered through the openings which were left between the blocks, of which some were only sustained by a miracle of equilibrium; but with the light came also air—a regular corridor-gale—and with the wind the sharp cold from the exterior. However, the sailor thought that by stopping-up some of the openings with a mixture of stones and sand, the Chimneys could be rendered habitable. Their geometrical plan represented the typographic sign “&,” which signifies “*et cætera*” abridged, but by isolating the upper mouth of the sign, through which the south and west winds blew so strongly, they could succeed in making the lower part of use.

“Here’s our work,” said Pencroft, “and if we ever see Captain Harding again, he will know how to make something of this labyrinth.”

“We shall see him again, Pencroft,” cried Herbert, “and when he returns he must find a tolerable dwelling here. It will be so, if we can make a fireplace in the left passage and keep an opening for the smoke.”

“So we can, my boy,” replied the sailor, “and these Chimneys will serve our turn. Let us set to work, but first come and get a store of fuel. I think some branches will be very useful in stopping up these openings, through which the wind shrieks like so many fiends.”

Herbert and Pencroft left the Chimneys, and, turning the angle, they began to climb the left bank of the river.

The current here was quite rapid, and drifted down some dead wood. The rising tide—and it could already be perceived—must drive it back with force to a considerable distance. The sailor then thought that they could utilize this ebb and flow for the transport of heavy objects.

After having walked for a quarter of an hour, the sailor and the boy arrived at the angle which the river made in turning towards the left. From this point its course was pursued through a forest of magnificent trees. These trees still retained their verdure, notwithstanding the advanced season, for they belonged to the family of "*coniferæ*," which is spread over all the regions of the globe, from northern climates to the tropics. The young naturalist recognized especially the "*deodara*," which are very numerous in the Himalayan zone, and which spread around them a most agreeable odour. Between these beautiful trees sprang up clusters of firs, whose opaque open parasol boughs spread wide around. Among the long grass, Pencroft felt that his feet were crushing dry branches which crackled like fireworks.

"Well, my boy," said he to Herbert, "if I don't know the name of these trees, at any rate I reckon that we may call them 'burning wood,' and just now that's the chief thing we want."

"Let us get a supply," replied Herbert, who immediately set to work.

The collection was easily made. It was not even necessary to lop the trees, for enormous quantities of dead wood were lying at their feet; but if fuel was not wanting, the means of transporting it was not yet found. The wood, being very dry, would burn rapidly; it was therefore necessary to carry to the Chimneys a considerable quantity, and the loads of two men would not be sufficient. Herbert remarked this.

"Well, my boy," replied the sailor, "there must be some way of carrying this wood; there is always a way of doing everything. If we had a cart or a boat, it would be easy enough."

"But we have the river," said Herbert.

"Right," replied Pencroft; "the river will be to us like a road which carries of itself, and rafts have not been invented for nothing."

"Only," observed Herbert, "at this moment our road is going the wrong way, for the tide is rising!"

"We shall be all right if we wait till it ebbs," replied the sailor, "and then we will trust it to carry our fuel to the Chimneys. Let us get the raft ready."

The sailor, followed by Herbert, directed his steps towards the river. They both carried, each in proportion to his strength, a load of wood bound in faggots. They found on the bank also a great quantity of dead branches in the midst of grass, among which the foot of man had

probably never before trod. Pencroft began directly to make his raft. In a kind of little bay, created by a point of the shore which broke the current, the sailor and the lad placed some good-sized pieces of wood, which they had fastened together with dry creepers. A raft was thus formed, on which they stacked all they had collected, sufficient, indeed, to have loaded at least twenty men. In an hour the work was finished, and the raft, moored to the bank, awaited the turning of the tide.

There were still several hours to be occupied, and with one consent Pencroft and Herbert resolved to gain the upper plateau, so as to have a more extended view of the surrounding country.

Exactly two hundred feet behind the angle formed by the river, the wall, terminated by a fall of rocks, died away in a gentle slope to the edge of the forest. It was a natural staircase. Herbert and the sailor began their ascent; thanks to the vigour of their muscles they reached the summit in a few minutes, and proceeded to the point above the mouth of the river.

On attaining it, their first look was cast upon the ocean which not long before they had traversed in such a terrible condition. They observed, with emotion, all that part to the north of the coast on which the catastrophe had taken place. It was there that Cyrus Harding had disappeared. They looked to see if some portion of their balloon, to

which a man might possibly cling, yet existed. Nothing! The sea was but one vast watery desert. As to the coast, it was solitary also. Neither the reporter nor Nēb could be anywhere seen. But it was possible that at this time they were both too far away to be perceived.

"Something tells me," cried Herbert, "that a man as energetic as Captain Harding would not let himself be drowned like other people. He must have reached some point of the shore; don't you think so, Pencroft?"

The sailor shook his head sadly. He little expected ever to see Cyrus Harding again; but wishing to leave some hope to Herbert: "Doubtless, doubtless," said he; "our engineer is a man who would get out of a scrape to which any one else would yield."

In the meantime he examined the coast with great attention. Stretched out below them was the sandy shore, bounded on the right of the river's mouth by lines of breakers. The rocks which were visible appeared like amphibious monsters reposing in the surf. Beyond the reef, the sea sparkled beneath the sun's rays. To the south a sharp point closed the horizon, and it could not be seen if the land was prolonged in that direction, or if it ran south-east and south-west, which would have made this coast a very long peninsula. At the northern extremity of the bay the outline of the shore was continued to a great distance in a wider curve. There the shore was low,

flat, without cliffs, and with great banks of sand, which the tide left uncovered. Pencroft and Herbert then returned towards the west. Their attention was first arrested by the snow-topped mountain which rose at a distance of six or seven miles. From its first declivities to within two miles of the coast were spread vast masses of wood, relieved by large green patches, caused by the presence of evergreen trees. Then, from the edge of this forest to the shore extended a plain, scattered irregularly with groups of trees. Here and there on the left sparkled through glades the waters of the little river; they could trace its winding course back towards the spurs of the mountain, among which it seemed to spring. At the point where the sailor had left his raft of wood, it began to run between the two high granite walls; but if on the left bank the wall remained clear and abrupt, on the right bank, on the contrary, it sank gradually, the massive sides changed to isolated rocks, the rocks to stones, the stones to shingle, running to the extremity of the point.

"Are we on an island?" murmured the sailor.

"At any rate, it seems to be big enough," replied the lad.

"An island, ever so big, is an island all the same!" said Pencroft.

But this important question could not yet be answered. A more perfect survey will be required to settle the point.

As to the land itself, island or continent, it appeared fertile, agreeable in its aspect, and varied in its productions.

"This is satisfactory," observed Pencroft; "and in our misfortune, we must thank Providence for it."

"God be praised!" responded Herbert, whose pious heart was full of gratitude to the Author of all things.

Pencroft and Herbert examined for some time the country on which they had been cast; but it was difficult to guess after so hasty an inspection what the future had in store for them.

They then returned, following the southern crest of the granite platform, bordered by a long fringe of jagged rocks, of the most whimsical shapes. Some hundreds of birds lived there nestled in the holes of the stone; Herbert, jumping over the rocks, startled a whole flock of these winged creatures.

"Oh!" cried he, "those are not gulls nor sea-mews!"

"What are they then?" asked Pencroft.

"Upon my word, one would say they were pigeons!"

"Just so, but these are wild or rock pigeons. I recognize them by the double band of black on the wing, by the white tail, and by their slate-coloured plumage. But if the rock-pigeon is good to eat, its eggs must be excellent, and we will soon see how many they may have left in their nests!"

"We will not give them time to hatch, unless it is in the shape of an omelette!" replied Pencroft merrily.

"But what will you make your omelette in?" asked Herbert; "in your hat?"

"Well!" replied the sailor, "I am not quite conjuror enough for that; we must come down to eggs in the shell, my boy, and I will undertake to despatch the hardest!"

Pencroft and Herbert attentively examined the cavities in the granite, and they really found eggs in some of the hollows. A few dozen being collected, were packed in the sailor's handkerchief, and as the time when the tide would be full was approaching, Pencroft and Herbert began to redescend towards the watercourse. When they arrived there, it was an hour after mid-day. The tide had already turned. They must now avail themselves of the ebb to take the wood to the mouth. Pencroft did not intend to let the raft go away in the current without guidance, neither did he mean to embark on it himself to steer it. But a sailor is never at a loss when there is a question of cables or ropes, and Pencroft rapidly twisted a cord, a few fathoms long, made of dry creepers. This vegetable cable was fastened to the after-part of the raft, and the sailor held it in his hand while Herbert, pushing off the raft with a long pole, kept it in the current. This succeeded capitally. The enormous load of wood drifted down with the

current. The bank was very equal; there was no fear that the raft would run aground, and before two o'clock they arrived at the river's mouth, a few paces from the Chimneys.

CHAPTER V.

ARRANGING THE CHIMNEYS—HOW TO PROCURE FIRE—

A BOX OF MATCHES—SEARCH ON THE SHORE—

RETURN OF THE REPORTER AND NEB—A SINGLE

MATCH—A ROARING FIRE—THE FIRST SUPPER, AND

NIGHT ON SHORE.

PENCROFT'S first care, after unloading the raft, was to render the cave habitable by stopping up all the holes which made it draughty. Sand, stones, twisted branches, wet clay, closed up the galleries open to the south winds. One narrow and winding opening at the side was kept, to lead out the smoke and to make the fire draw. The cave was thus divided into three or four rooms, if such dark dens with which a donkey would scarcely have been contented deserved the name. But they were dry, and there was space to stand upright, at least in the principal room, which occupied the centre. The floor was covered with fine sand, and taking all in all they were well pleased with it for want of a better.

"Perhaps," said Herbert, while he and Pencroft were working, "our companions have found a superior place to ours."

"Very likely," replied the seaman; "but, as we don't know, we must work all the same. Better to have two strings to one's bow than no string at all!"

"Oh!" exclaimed Herbert, "how jolly it will be if they were to find Captain Harding and were to bring him back with them!"

"Yes, indeed!" said Pencroft, "that was a man of the right sort."

"Was!" exclaimed Herbert, "do you despair of ever seeing him again?"

"God forbid!" replied the sailor. Their work was soon done, and Pencroft declared himself very well satisfied.

"Now," said he, "our friends can come back when they like. They will find a good enough shelter."

They now had only to make a fireplace and to prepare the supper—an easy task. Large flat stones were placed on the ground at the opening of the narrow passage which had been kept. This, if the smoke did not take the heat out with it, would be enough to maintain an equal temperature inside. Their wood was stowed away in one of the rooms, and the sailor laid in the fireplace some logs and brushwood. The seaman was busy with this, when Herbert asked him if he had any matches.

"Certainly," replied Pencroft, "and I may say happily, for without matches or tinder we should be in a fix."

"Still we might get fire as the savages do," replied Herbert, "by rubbing two bits of drystick one against the other."

"All right ; try, my boy, and let's see if you can do anything besides exercising your arms."

"Well, it's a very simple proceeding, and much used in the islands of the Pacific."

"I don't deny it," replied Pencroft, "but the savages must know how to do it or employ a peculiar wood, for more than once I have tried to get fire in that way. but I could never manage it. I must say I prefer matches. By-the-bye, where are my matches?"

Pencroft searched in his waistcoat for the box, which was always there, for he was a confirmed smoker. He could not find it ; he rummaged the pockets of his trousers, but, to his horror, he could nowhere discover the box.

"Here's a go!" said he, looking at Herbert. "The box must have fallen out of my pocket and got lost ! Surely, Herbert, you must have something—a tinder-box—anything that can possibly make fire !"

"No, I haven't, Pencroft."

The sailor rushed out, followed by the boy. On the sand, among the rocks, near the river's bank, they both searched carefully, but in vain. The box was of copper, and therefore would have been easily seen.

"Pencroft," asked Herbert, "didn't you throw it out of the car?"

"I knew better than that," replied the sailor; "but such a small article could easily disappear in the tumbling about we have gone through. I would rather even have lost my pipe! Confound the box! Where can it be?"

"Look here, the tide is going down," said Herbert; "let's run to the place where we landed."

It was scarcely probable that they would find the box, which the waves had rolled about among the pebbles, at high tide, but it was as well to try. Herbert and Pencroft walked rapidly to the point where they had landed the day before, about two hundred feet from the cave. They hunted there, amongst the shingle, in the clefts of the rocks, but found nothing. If the box had fallen at this place it must have been swept away by the waves. As the sea went down, they searched every little crevice with no result. It was a grave loss in their circumstances, and for the time irreparable. Pencroft could not hide his vexation; he looked very anxious, but said not a word. Herbert tried to console him by observing, that if they had found the matches, they would, very likely, have been wetted by the sea and useless.

"No, my boy," replied the sailor; "they were in a copper box which shut very tightly; and now what are we to do?"

"We shall certainly find some way of making a fire," said Herbert. "Captain Harding or Mr. Spilett will not be without them."

"Yes," replied Pencroft; "but in the meantime we are without fire, and our companions will find but a sorry repast on their return."

"But," said Herbert quickly, "do you think it possible that they have no tinder or matches?"

"I doubt it," replied the sailor, shaking his head, "for neither Neb nor Captain Harding smoke, and I believe that Mr. Spilett would rather keep his note-book than his match-box."

Herbert did not reply. The loss of the box was certainly to be regretted, but the boy was still sure of procuring fire in some way or other. Pencroft, more experienced, did not think so, although he was not a man to trouble himself about a small or great grievance. At any rate, there was only one thing to be done—to await the return of Neb and the reporter; but they must give up the feast of hard eggs which they had meant to prepare, and a meal of raw flesh was not an agreeable prospect either for themselves or for the others.

Before returning to the cave, the sailor and Herbert, in the event of fire being positively unattainable, collected some more shell-fish, and then silently retraced their steps to their dwelling.

Pencroft, his eyes fixed on the ground, still looked for his box. He even climbed up the left bank of the river from its mouth to the angle where the raft had been moored. He returned to the plateau, went over it in every direction, searched amongst the high grass on the border of the forest, all in vain.

It was five in the evening when he and Herbert re-entered the cave. It is useless to say that the darkest corners of the passages were ransacked before they were obliged to give it up in despair. Towards six o'clock, when the sun was disappearing behind the high lands of the west, Herbert, who was walking up and down on the strand, signalized the return of Neb and Spilett.

They were returning alone ! . . . The boy's heart sank ; the sailor had not been deceived in his forebodings ; the engineer, Cyrus Harding, had not been found !

The reporter, on his arrival, sat down on a rock, without saying anything. Exhausted with fatigue, dying of hunger, he had not strength to utter a word.

As to Neb, his red eyes showed how he had cried, and the tears which he could not restrain told too clearly that he had lost all hope.

The reporter recounted all that they had done in their attempt to recover Cyrus Harding. He and Neb had surveyed the coast for a distance of eight miles, and consequently much beyond the place where the balloon had

fallen the last time but one, a fall which was followed by the disappearance of the engineer and the dog Top. The shore was solitary ; not a vestige of a mark. Not even a pebble recently displaced ; not a trace on the sand ; not a human footstep on all that part of the beach. It was clear that that portion of the shore had never been visited by a human being. The sea was as deserted as the land, and it was there, a few hundred feet from the coast, that the engineer must have found a tomb.

As Spilett ended his account, Neb jumped up, exclaiming in a voice which showed how hope struggled within him, "No! he is not dead! he can't be dead! It might happen to any one else, but never to him! He could get out of anything!" Then his strength forsaking him, "Oh! I can do no more!" he murmured.

"Neb," said Herbert, running to him, "we will find him! God will give him back to us! But in the meantime you are hungry, and you must eat something."

So saying, he offered the poor negro a few handfuls of shell-fish, which was indeed wretched and insufficient food. Neb had not eaten anything for several hours, but he refused them. He could not, would not live without his master.

As to Gideon Spilett, he devoured the shell-fish, then he laid himself down on the sand, at the foot of a rock. He was very weak, but calm. Herbert went up to him, and taking

his hand, "Sir," said he, "we have found a shelter which will be better than lying here. Night is advancing. Come and rest ! To-morrow we will search farther."

The reporter got up, and guided by the boy went towards the cave. On the way, Pencroft asked him in the most natural tone, if by chance he happened to have a match or two.

The reporter stopped, felt in his pockets, but finding nothing said, "I had some, but I must have thrown them away."

The seaman then put the same question to Neb and received the same answer.

"Confound it !" exclaimed the sailor.

The reporter heard him and seizing his arm, "Have you no matches ?" he asked.

"Not one, and no fire in consequence ?"

"Ah !" cried Neb, "if my master was here, he would know what to do !"

The four castaways remained motionless, looking uneasily at each other. Herbert was the first to break the silence by saying, "Mr. Spilett, you are a smoker and always have matches about you ; perhaps you haven't looked well, try again, a single match will be enough !"

The reporter hunted again in the pockets of his trousers, waistcoat, and great-coat, and at last to Pencroft's great joy, not less to his extreme surprise, he felt a tiny piece of wood

entangled in the lining of his waistcoat. He seized it with his fingers through the stuff, but he could not get it out. If this was a match and a single one, it was of great importance not to rub off the phosphorus.

"Will you let me try?" said the boy, and very cleverly, without breaking it, he managed to draw out the wretched yet precious little bit of wood which was of such great importance to these poor men. It was unused.

"Hurrah!" cried Pencroft; "it is as good as having a whole cargo!" He took the match, and, followed by his companions, entered the cave.

This small piece of wood, of which so many in an inhabited country are wasted with indifference and are of no value, must here be used with the greatest caution.

The sailor first made sure that it was quite dry; that done, "We must have some paper," said he.

"Here," replied Spilett, after some hesitation tearing a leaf out of his note-book.

Pencroft took the piece of paper which the reporter held out to him, and knelt down before the fireplace. Some handfuls of grass, leaves, and dry moss were placed under the faggots and disposed in such a way that the air could easily circulate, and the dry wood would rapidly catch fire.

Pencroft then twisted the piece of paper into the shape of a cone, as smokers do in a high wind, and poked it in amongst the moss. Taking a small, rough stone, he wiped

it carefully, and with a beating heart, holding his breath, he gently rubbed the match. The first attempt did not produce any effect. Pencroft had not struck hard enough, fearing to rub off the phosphorus.

"No, I can't do it," said he, "my hand trembles, the match has missed fire; I cannot, I will not!" and rising, he told Herbert to take his place.

Certainly the boy had never in all his life been so nervous. Prometheus going to steal the fire from heaven could not have been more anxious. He did not hesitate, however, but struck the match directly.

A little spluttering was heard and a tiny blue flame sprang up, making a choking smoke. Herbert quietly turned the match so as to augment the flame, and then slipped it into the paper cone, which in a few seconds too caught fire, and then the moss.

A minute later the dry wood crackled and a cheerful flame, assisted by the vigorous blowing of the sailor, sprang up in the midst of the darkness.

"At last!" cried Pencroft, getting up; "I was never so nervous before in all my life!"

The flat stones made a capital fireplace. The smoke went quite easily out at the narrow passage, the chimney drew, and an agreeable warmth was not long in being felt.

They must now take great care not to let the fire go out, and always to keep some embers alight. It only needed

care and attention, as they had plenty of wood and could renew their store at any time.

Pencroft's first thought was to use the fire by preparing a more nourishing supper than a dish of shell-fish. Two dozen eggs were brought by Herbert. The reporter leaning up in a corner, watched these preparations without saying anything. A threefold thought weighed on his mind. Was Cyrus still alive? If he was alive, where was he? If he had survived from his fall, how was it that he had not found some means of making known his existence? As to Neb, he was roaming about the shore. He was like a body without a soul.

Pencroft knew fifty ways of cooking eggs, but this time he had no choice, and was obliged to content himself with roasting them under the hot cinders. In a few minutes the cooking was done, and the seaman invited the reporter to take his share of the supper. Such was the first repast of the castaways on this unknown coast. The hard eggs were excellent, and as eggs contain everything indispensable to man's nourishment, these poor people thought themselves well off, and were much strengthened by them. Oh! if only one of them had not been missing at this meal! If the five prisoners who escaped from Richmond had been all there, under the piled-up rocks, before this clear, crackling fire on the dry sand, what thanksgivings must they have rendered to Heaven! But the most

ingenious, the most learned, he who was their unquestioned chief, Cyrus Harding was, alas! missing, and his body had not even obtained a burial-place.

Thus passed the 25th of March. Night had come on. Outside could be heard the howling of the wind and the monotonous sound of the surf breaking on the shore. The waves rolled the shingle backwards and forwards with a deafening noise.

The reporter retired into a dark corner after having shortly noted down the occurrences of the day; the first appearance of this new land, the loss of their leader, the exploration of the coast, the incident of the matches, &c.; and then overcome by fatigue, he managed to forget his sorrow in sleep. Herbert went to sleep directly. As to the sailor, he passed the night with one eye on the fire, on which he did not spare fuel. But one of the castaways did not sleep in the cave. The inconsolable, despairing Neb, notwithstanding all that his companions could say to induce him to take some rest, wandered all night long on the shore, calling on his master.

CHAPTER VI.

THE INVENTORY OF THE CASTAWAYS—NOTHING—BURNT
LINEN—AN EXPEDITION TO THE FOREST—FLIGHT
OF THE JACAMAR—TRACES OF DEER—COUROUCOUS
—GROUSE—A CURIOUS FISHING-LINE.

THE inventory of the articles possessed by these castaways from the clouds, thrown upon a coast which appeared to be uninhabited, was soon made out. They had nothing, save the clothes which they were wearing at the time of the catastrophe. We must mention, however, a note-book and a watch which Gideon Spilett had kept, doubtless by inadvertence, not a weapon, not a tool, not even a pocket-knife ; for while in the car they had thrown out everything to lighten the balloon. The imaginary heroes of Daniel De Foe or of Wyss, as well as Selkirk and Raynal shipwrecked on Juan Fernandez and on the archipelago of the Aucklands, were never in such absolute destitution. Either they had abundant resources from their stranded vessels, in

grain, cattle, tools, ammunition, or else some things were thrown up on the coast which supplied them with all the first necessities of life. But here, not any instrument whatever, not a utensil. From nothing they must supply themselves with everything.

And yet, if Cyrus Harding had been with them, if the engineer could have brought his practical science, his inventive mind to bear on their situation, perhaps all hope would not have been lost. Alas! they must hope no longer again to see Cyrus Harding. The castaways could expect nothing but from themselves and from that Providence which never abandons those whose faith is sincere.

But ought they to establish themselves on this part of the coast, without trying to know to what continent it belonged, if it was inhabited, or if they were on the shore of a desert island?

It was an important question, and should be solved with the shortest possible delay. From its answer they would know what measures to take. However, according to Pencroft's advice, it appeared best to wait a few days before commencing an exploration. They must, in fact, prepare some provisions and procure more strengthening food than eggs and molluscs. The explorers, before undertaking new fatigues, must first of all recruit their strength.

The Chimneys offered a retreat sufficient for the present.

The fire was lighted, and it was easy to preserve some embers. There were plenty of shell-fish and eggs amongst the rocks and on the beach. It would be easy to kill a few of the pigeons which were flying by hundreds about the summit of the plateau, either with sticks or stones. Perhaps the trees of the neighbouring forest would supply them with eatable fruit. Lastly, the sweet water was there.

It was accordingly settled that for a few days they would remain at the Chimneys so as to prepare themselves for an expedition, either along the shore or into the interior of the country. This plan suited Neb particularly. As obstinate in his ideas as in his presentiments, he was in no haste to abandon this part of the coast, the scene of the catastrophe. He did not, he would not believe in the loss of Cyrus Harding. No, it did not seem to him possible that such a man had ended in this vulgar fashion, carried away by a wave, drowned in the floods, a few hundred feet from a shore. As long as the waves had not cast up the body of the engineer, as long as he, Neb, had not seen with his eyes, touched with his hands the corpse of his master, he would not believe in his death! And this idea rooted itself deeper than ever in his determined heart. An illusion perhaps, but still an illusion to be respected, and one which the sailor did not wish to destroy. As for him, he hoped no longer, but there was no use in arguing with

Neb. He was like the dog who will not leave the place where his master is buried, and his grief was such that most probably he would not survive him.

This same morning, the 26th of March, at daybreak, Neb had set out on the shore in a northerly direction, and he had returned to the spot where the sea, no doubt, had closed over the unfortunate Harding.

That day's breakfast was composed solely of pigeon's eggs and lithodomes. Herbert had found some salt deposited by evaporation in the hollows of the rocks, and this mineral was very welcome.

The repast ended, Pencroft asked the reporter if he wished to accompany Herbert and himself to the forest, where they were going to try to hunt. But on consideration, it was thought necessary that some one should remain to keep in the fire, and to be at hand in the highly improbable event of Neb requiring aid. The reporter accordingly remained behind.

"To the chase, Herbert," said the sailor. "We shall find ammunition on our way, and cut our weapons in the forest." But at the moment of starting, Herbert observed, that since they had no tinder, it would perhaps be prudent to replace it by another substance.

"What?" asked Pencroft.

"Burnt linen," replied the boy. "That could in case of need serve for tinder."

The sailor thought it very sensible advice. Only it had the inconvenience of necessitating the sacrifice of a piece of handkerchief. Notwithstanding, the thing was well worth while trying, and a part of Pencroft's large checked handkerchief was soon reduced to the state of a half-burnt rag. This inflammable material was placed in the central chamber at the bottom of a little cavity in the rock, sheltered from all wind and damp.

It was nine o'clock in the morning. The weather was threatening and the breeze blew from the south-east. Herbert and Pencroft turned the angle of the Chimneys, not without having cast a look at the smoke which, just at that place, curled round a point of rock: they ascended the left bank of the river.

Arrived at the forest, Pencroft broke from the first tree two stout branches which he transformed into clubs, the ends of which Herbert rubbed smooth on a rock. Oh! what would they not have given for a knife!

The two hunters now advanced among the long grass, following the bank. From the turning which directed its course to the south-west, the river narrowed gradually and the channel lay between high banks, over which the trees formed a double arch. Pencroft, lest they should lose themselves, resolved to follow the course of the stream, which would always lead them back to the point from which they started. But the bank was not without some

obstacles: here, the flexible branches of the trees bent level with the current; there, creepers and thorns which they had to break down with their sticks. Herbert often glided among the broken stumps with the agility of a young cat, and disappeared in the underwood. But Pencroft called him back directly, begging him not to wander away. Meanwhile, the sailor attentively observed the disposition and nature of the surrounding country. On the left bank, the ground, which was flat and marshy, rose imperceptibly towards the interior. It looked there like a network of liquid threads which doubtless reached the river by some underground drain. Sometimes a stream ran through the underwood, which they crossed without difficulty. The opposite shore appeared to be more uneven, and the valley of which the river occupied the bottom, was more clearly visible. The hill, covered with trees disposed in terraces, intercepted the view. On the right bank walking would have been difficult, for the declivities fell suddenly, and the trees bending over the water were only sustained by the strength of their roots.

It is needless to add that this forest, as well as the coast already surveyed, was destitute of any sign of human life. Pencroft only saw traces of quadrupeds, fresh footprints of animals, of which he could not recognize the species. In all probability, and such was also Herbert's opinion, some had been left by formidable wild beasts which doubtless

would give them some trouble; but nowhere did they observe the mark of an axe on the trees, nor the ashes of a fire, nor the impression of a human foot. On this they might probably congratulate themselves, for on any land in the middle of the Pacific the presence of man was perhaps more to be feared than desired. Herbert and Pencroft speaking little, for the difficulties of the way were great, advanced very slowly, and after walking for an hour they had scarcely gone more than a mile. As yet the hunt had not been successful. However, some birds sang and fluttered in the foliage, and appeared very timid, as if man had inspired them with an instinctive fear. Amongst others, Herbert descried, in a marshy part of the forest, a bird with a long pointed beak, closely resembling the kingfisher, but its plumage was not fine, though of a metallic brilliancy.

"That must be a jacamar," said Herbert, trying to get nearer.

"This will be a good opportunity to taste jacamar," replied the sailor, "if that fellow is in a humour to be roasted!"

Just then, a stone cleverly thrown by the boy, struck the creature on the wing, but the blow did not disable it, and the jacamar ran off and disappeared in an instant.

"How clumsy I am!" cried Herbert.

"No, no, my boy!" replied the sailor. "The blow was

well aimed ; many a one would have missed it altogether ! Come, don't be vexed with yourself. We shall catch it another day !”

As the hunters advanced, the trees were found to be more scattered, many being magnificent, but none bore eatable fruit. Pencroft searched in vain for some of those precious palm-trees which are employed in so many ways in domestic life, and which have been found as far as the fortieth parallel in the northern hemisphere, and to the thirty-fifth only in the southern hemisphere. But this forest was only composed of coniferæ, such as deodaras, already recognized by Herbert, the Douglas pine, similar to those which grow on the north-west coast of America, and splendid firs, measuring a hundred and fifty feet in height.

At this moment a flock of birds, of a small size and pretty plumage, with long glancing tails, dispersed themselves among the branches strewing their feathers, which covered the ground as with fine down. Herbert picked up a few of these feathers, and after having examined them,—

“These are couroucous,” said he.

“I should prefer a moor-cock or guinea-fowl,” replied Pencroft, “still, if they are good to eat—”

“They are good to eat, and also their flesh is very delicate,” replied Herbert. “Besides, if I don't mistake, it is easy to approach and kill them with a stick.”

The sailor and the lad, creeping amongst the grass, arrived at the foot of a tree, whose lower branches were covered with little birds. The couroucous were waiting the passage of insects which served for their nourishment. Their feathery feet could be seen clasping the slender twigs which supported them.

The hunters then rose, and using their sticks like scythes, they mowed down whole rows of these couroucous, who never thought of flying away, and stupidly allowed themselves to be knocked off. A hundred were already heaped on the ground, before the others made up their minds to fly.

"Well," said Pencroft, "here is game, which is quite within the reach of hunters like us. We have only to put out our hands and take it!"

The sailor having strung the couroucous like larks on flexible twigs, they then continued their exploration. The stream here made a bend towards the south, but this *détour* was probably not prolonged, for the river must have its source in the mountain, and be supplied by the melting of the snow which covered the sides of the central cone.

The particular object of their expedition was, as has been said, to procure the greatest possible quantity of game for the inhabitants of the Chimneys. It must be acknowledged that as yet this object had not been

attained. So the sailor actively pursued his researches, though he exclaimed, when some animal which he had not even time to recognize fled into the long grass, "If only we had had the dog Top!" But Top had disappeared at the same time as his master, and had probably perished with him.

Towards three o'clock new flocks of birds were seen through certain trees, at whose aromatic berries they were pecking, those of the juniper-tree among others. Suddenly a loud trumpet call resounded through the forest. This strange and sonorous call was produced by the ruffed grouse or the "téra," of the United States. They soon saw several couples, whose plumage was rich chestnut-brown mottled with dark brown, and tail of the same colour. Herbert recognized the males by the two wing-like appendages raised on the neck. Pencroft determined to get hold of at least one of these gallinaceæ, which were as large as a fowl, and whose flesh is better than that of a pullet. But it was difficult, for they would not allow themselves to be approached. After several fruitless attempts, which resulted in nothing but scaring the tétras, the sailor said to the lad,—

"Decidedly, since we can't kill them on the wing, we must try to take them with a line."

"Like a fish?" cried Herbert, much surprised at the proposal.

"Like a fish," replied the sailor quite seriously. Pencroft had found amongst the grass half a dozen tétas' nests, each having three or four eggs. He took great care not to touch these nests, to which their proprietors would not fail to return. It was around these that he meant to stretch his lines, not snares, but real fishing-lines. He took Herbert to some distance from the nests, and there prepared his singular apparatus with all the care which a disciple of Izaak Walton would have used. Herbert watched the work with great interest, though rather doubting its success. The lines were made of fine creepers, fastened one to the other, of the length of fifteen or twenty feet. Thick, strong thorns, the points bent back, which were supplied from a dwarf acacia bush, were fastened to the ends of the creepers, by way of hooks. Large red worms, which were crawling on the ground, furnished bait.

This done, Pencroft, passing amongst the grass and concealing himself skilfully, placed the end of his lines armed with hooks near the tétas' nests; then he returned, took the other ends and hid with Herbert behind a large tree. There they both waited patiently; though, it must be said, that Herbert did not reckon much on the success of the inventive Pencroft.

A whole half-hour passed, but then, as the sailor had surmised, several couple of tétas returned to their nests. They walked along, pecking the ground, and not suspect-

ing in any way the presence of the hunters, who, besides, had taken care to place themselves to leeward of the gallinaceæ.

The lad felt at this moment highly interested. He held his breath, and Pencroft, his eyes staring, his mouth open, his lips advanced, as if about to taste a piece of *tétra*, scarcely breathed.

Meanwhile, the birds walked about among the hooks, without taking any notice of them. Pencroft then gave little tugs which moved the bait as if the worms had been still alive.

The sailor undoubtedly felt much greater anxiety than does the fisherman, for he does not see his prey coming through the water. The jerks attracted the attention of the gallinaceæ, and they attacked the hooks with their beaks. Three voracious *tétras* swallowed at the same moment bait and hook. Suddenly with a smart jerk, Pencroft "struck" his line, and a flapping of wings showed that the birds were taken.

"Hurrah!" he cried, rushing towards the game, of which he made himself master in an instant.

Herbert clapped his hands. It was the first time that he had ever seen birds taken with a line, but the sailor modestly confessed that it was not his first attempt, and that besides he could not claim the merit of invention.

"And at any rate," added he, "situated as we are, we must hope to hit upon many other contrivances."

The tétas were fastened by their claws, and Pencroft, delighted at not having to appear before their companions with empty hands, and observing that the day had begun to decline, judged it best to return to their dwelling.

The direction was indicated by the river, whose course they had only to follow, and, towards six o'clock, tired enough with their excursion, Herbert and Pencroft arrived at the Chimneys.

CHAPTER VII.

NEB HAS NOT YET RETURNED—THE REPORTER'S REFLECTIONS—SUPPER—A THREATENING NIGHT—THE TEMPEST IS FRIGHTFUL—THEY RUSH OUT INTO THE NIGHT—STRUGGLE AGAINST THE WIND AND RAIN—EIGHT MILES FROM THE FIRST ENCAMPMENT.

GIDEON SPILETT was standing motionless on the shore, his arms crossed, gazing over the sea, the horizon of which was lost towards the east in a thick black cloud which was spreading rapidly towards the zenith. The wind was already strong, and increased with the decline of day. The whole sky was of a threatening aspect, and the first symptoms of a violent storm were clearly visible.

Herbert entered the Chimneys, and Pencroft went towards the reporter. The latter, deeply absorbed, did not see him approach.

"We are going to have a dirty night, Mr. Spilett!" said the sailor: "Petrels delight in wind and rain."

The reporter, turning at the moment, saw Pencroft, and his first words were,—

“At what distance from the coast would you say the car was, when the waves carried off our companion?”

The sailor had not expected this question. He reflected an instant and replied,—

“Two cables’ lengths at the most.”

“But what is a cable’s length?” asked Gideon Spilett.

“About a hundred and twenty fathoms, or 600 feet.”

“Then,” said the reporter, “Cyrus Harding must have disappeared twelve hundred feet at the most from the shore?”

“About that,” replied Pencroft.

“And his dog also?”

“Also.”

“What astonishes me,” rejoined the reporter, “while admitting that our companion has perished, is that Top has also met his death, and that neither the body of the dog nor of his master has been cast on the shore!”

“It is not astonishing, with such a heavy sea,” replied the sailor. “Besides, it is possible that currents have carried them farther down the coast.”

“Then, it is your opinion that our friend has perished in the waves?” again asked the reporter.

“That is my opinion.”

“My own opinion,” said Gideon Spilett, “with due

deference to your experience, Pencroft, is that in the double fact of the absolute disappearance of Cyrus and Top, living or dead, there is something unaccountable and unlikely."

"I wish I could think like you, Mr. Spilett," replied Pencroft; "unhappily, my mind is made up on this point." Having said this, the sailor returned to the Chimneys. A good fire crackled on the hearth. Herbert had just thrown on an armful of dry wood, and the flame cast a bright light into the darkest parts of the passage.

Pencroft immediately began to prepare the dinner. It appeared best to introduce something solid into the bill of fare, for all needed to get up their strength. The strings of couroucous were kept for the next day, but they plucked a couple of tétras, which were soon spitted on a stick, and roasting before a blazing fire.

At seven in the evening Neb had not returned. The prolonged absence of the negro made Pencroft very uneasy. It was to be feared that he had met with an accident on this unknown land, or that the unhappy fellow had been driven to some act of despair. But Herbert drew very different conclusions from this absence. According to him, Neb's delay was caused by some new circumstance which had induced him to prolong his search. Also, everything new must be to the advantage of Cyrus Harding. Why had Neb not returned unless hope still detained him?

Perhaps he had found some mark, a footstep, a trace which had put him in the right path. Perhaps he was at this moment on a certain track. Perhaps even he was near his master.

Thus the lad reasoned. Thus he spoke. His companions let him talk. The reporter alone approved with a gesture. But what Pencroft thought most probable was, that Neb had pushed his researches on the shore farther than the day before, and that he had not as yet had time to return.

Herbert, however, agitated by vague presentiments, several times manifested an intention to go to meet Neb. But Pencroft assured him that that would be a useless course, that in the darkness and deplorable weather he could not find any traces of Neb, and that it would be much better to wait. If Neb had not made his appearance by the next day, Pencroft would not hesitate to join him in his search.

Gideon Spilett approved of the sailor's opinion that it was best not to divide, and Herbert was obliged to give up his project; but two large tears fell from his eyes.

The reporter could not refrain from embracing the generous boy.

Bad weather now set in. A furious gale from the south-east passed over the coast. The sea roared as it beat over the reef. Heavy rain was dashed by the storm

into particles like dust. Ragged masses of vapour drove along the beach, on which the tormented shingles sounded as if poured out in cart-loads, while the sand raised by the wind added as it were mineral dust to that which was liquid, and rendered the united attack insupportable. Between the river's mouth and the end of the cliff, eddies of wind whirled and gusts from this maelstrom lashed the water which ran through the narrow valley. The smoke from the fireplace was also driven back through the opening, filling the passages and rendering them uninhabitable.

Therefore, as the tétas were cooked, Pencroft let the fire die away, and only preserved a few embers buried under the ashes.

At eight o'clock Neb had not appeared, but there was no doubt that the frightful weather alone hindered his return, and that he must have taken refuge in some cave, to await the end of the storm or at least the return of day. As to going to meet him, or attempting to find him, it was impossible.

The game constituted the only dish at supper ; the meat was excellent, and Pencroft and Herbert, whose long excursion had rendered them very hungry, devoured it with infinite satisfaction.

Their meal concluded, each retired to the corner in which he had rested the preceding night, and Herbert was

not long in going to sleep near the sailor, who had stretched himself beside the fireplace.

Outside, as the night advanced, the tempest also increased in strength, until it was equal to that which had carried the prisoners from Richmond to this land in the Pacific. The tempests which are frequent during the seasons of the equinox, and which are so prolific in catastrophes, are above all terrible over this immense ocean, which opposes no obstacle to their fury. No description can give an idea of the terrific violence of the gale as it beat upon the unprotected coast.

Happily the pile of rocks which formed the Chimneys was solid. It was composed of enormous blocks of granite, a few of which, insecurely balanced, seemed to tremble on their foundations, and Pencroft could feel rapid quiverings under his head as it rested on the rock. But he repeated to himself, and rightly, that there was nothing to fear, and that their retreat would not give way. However he heard the noise of stones torn from the summit of the plateau by the wind, falling down on to the beach. A few even rolled on to the upper part of the Chimneys, or flew off in fragments when they were projected perpendicularly. Twice the sailor rose and intrenched himself at the opening of the passage, so as to take a look in safety at the outside. But there was nothing to be feared from these showers, which were not considerable, and he returned to his couch before

the fireplace, where the embers glowed beneath the ashes.

Notwithstanding the fury of the hurricane, the uproar of the tempest, the thunder, and the tumult, Herbert slept profoundly. Sleep at last took possession of Pencroft, whom a seafaring life had habituated to anything. Gideon Spilett alone was kept awake by anxiety. He reproached himself with not having accompanied Neb. It was evident that he had not abandoned all hope. The presentiments which had troubled Herbert did not cease to agitate him also. His thoughts were concentrated on Neb. Why had Neb not returned? He tossed about on his sandy couch, scarcely giving a thought to the struggle of the elements. Now and then, his eyes, heavy with fatigue, closed for an instant, but some sudden thought reopened them almost immediately.

Meanwhile the night advanced, and it was perhaps two hours from morning, when Pencroft, then sound asleep, was vigorously shaken.

"What's the matter?" he cried, rousing himself, and collecting his ideas with the promptitude usual to seamen.

The reporter was leaning over him, and saying,—

"Listen, Pencroft, listen!"

The sailor strained his ears, but could hear no noise beyond those caused by the storm.

"It is the wind," said he.

"No," replied Gideon Spilett, listening again, "I thought I heard—"

"What?"

"The barking of a dog!"

"A dog!" cried Pencroft, springing up.

"Yes—barking—"

"It's not possible!" replied the sailor. "And besides, how, in the roaring of the storm—"

"Stop—listen—" said the reporter.

Pencroft listened more attentively, and really thought he heard, during a lull, distant barking.

"Well!" said the reporter, pressing the sailor's hand.

"Yes—yes!" replied Pencroft.

"It is Top! It is Top!" cried Herbert, who had just awoke; and all three rushed towards the opening of the Chimneys. They had great difficulty in getting out. The wind drove them back. But at last they succeeded, and could only remain standing by leaning against the rocks. They looked about, but could not speak. The darkness was intense. The sea, the sky, the land were all mingled in one black mass. Not a speck of light was visible.

The reporter and his companions remained thus for a few minutes, overwhelmed by the wind, drenched by the rain, blinded by the sand.

Then, in a pause of the tumult, they again heard the barking, which they found must be at some distance.

It could only be Top! But was he alone or accompanied? He was most probably alone, for, if Neb had been with him, he would have made his way more directly towards the Chimneys. The sailor squeezed the reporter's hand, for he could not make himself heard, in a way which signified "Wait!" then he re-entered the passage.

An instant after he issued with a lighted fagot, which he threw into the darkness, whistling shrilly.

It appeared as if this signal had been waited for; the barking immediately came nearer, and soon a dog bounded into the passage. Pencroft, Herbert, and Spilett, entered after him.

An armful of dry wood was thrown on the embers. The passage was lighted up with a bright flame.

"It is Top!" cried Herbert.

It was indeed Top, a magnificent Anglo-Norman, who derived from these two races crossed the swiftness of foot and the acuteness of smell which are the pre-eminent qualities of coursing dogs. It was the dog of the engineer Cyrus Harding. But he was alone! Neither Neb nor his master accompanied him!

How was it that his instinct had guided him straight to the Chimneys, which he did not know? It appeared inexplicable, above all, in the midst of this black night and in such a tempest! But what was still more inexplicable was, that Top was neither tired, nor exhausted, nor even soiled

with mud or sand!—Herbert had drawn him towards him, and was patting his head, the dog rubbing his neck against the lad's hands.

"If the dog is found, the master will be found also?" said the reporter.

"God grant it!" responded Herbert. "Let us set off! Top will guide us!"

Pencroft did not make any objection. He felt that Top's arrival contradicted his conjectures. "Come along then!" said he.

Pencroft carefully covered the embers on the hearth. He placed a few pieces of wood amongst them, so as to keep in the fire until their return. Then, preceded by the dog, who seemed to invite them by short barks to come with him, and followed by the reporter and the boy, he dashed out, after having put up in his handkerchief the remains of the supper.

The storm was then in all its violence, and perhaps at its height. Not a single ray of light from the moon pierced through the clouds. To follow a straight course was difficult. It was best to rely on Top's instinct. They did so. The reporter and Herbert walked behind the dog, and the sailor brought up the rear. It was impossible to exchange a word. The rain was not very heavy, but the wind was terrific.

However, one circumstance favoured the seaman and

his two companions. The wind being south-east, consequently blew on their backs. The clouds of sand, which otherwise would have been insupportable, from being received behind, did not in consequence impede their progress. In short, they sometimes went faster than they liked, and had some difficulty in keeping their feet; but hope gave them strength, for it was not at random that they made their way along the shore. They had no doubt that Neb had found his master, and that he had sent them the faithful dog. But was the engineer living, or had Neb only sent for his companions that they might render the last duties to the corpse of the unfortunate Harding?

After having passed the precipice, Herbert, the reporter, and Pencroft prudently stepped aside to stop and take breath. The turn of the rocks sheltered them from the wind, and they could breathe after this walk or rather run of a quarter of an hour.

They could now hear and reply to each other, and the lad having pronounced the name of Cyrus Harding, Top gave a few short barks, as much as to say that his master was saved.

"Saved, isn't he?" repeated Herbert; "saved, Top?"

And the dog barked in reply.

They once more set out. The tide began to rise, and urged by the wind it threatened to be unusually high, as it was a spring tide. Great billows thundered against the

reef with such violence that they probably passed entirely over the islet, then quite invisible. The mole no longer protected the coast, which was directly exposed to the attacks of the open sea.

As soon as the sailor and his companions left the precipice, the wind struck them again with renewed fury. Though bent under the gale they walked very quickly, following Top, who did not hesitate as to what direction to take.

They ascended towards the north, having on their left an interminable extent of billows, which broke with a deafening noise, and on their right a dark country, the aspect of which it was impossible to guess. But they felt that it was comparatively flat, for the wind passed completely over them, without being driven back as it was when it came in contact with the cliff.

At four o'clock in the morning, they reckoned that they had cleared about five miles. The clouds were slightly raised, and the wind, though less damp, was very sharp and cold. Insufficiently protected by their clothing, Pencroft, Herbert, and Spilett suffered cruelly, but not a complaint escaped their lips. They were determined to follow Top, wherever the intelligent animal wished to lead them.

Towards five o'clock day began to break. At the zenith, where the fog was less thick, grey shades bordered the

clouds ; under an opaque belt, a luminous line clearly traced the horizon. The crests of the billows were tipped with a wild light, and the foam regained its whiteness. At the same time on the left the hilly parts of the coast could be seen, though very indistinctly.

At six o'clock day had broken. The clouds rapidly lifted. The seaman and his companions were then about six miles from the Chimneys. They were following a very flat shore bounded by a reef of rocks, whose heads scarcely emerged from the sea, for they were in deep water. On the left, the country appeared to be one vast extent of sandy downs, bristling with thistles. There was no cliff, and the shore offered no resistance to the ocean but a chain of irregular hillocks. Here and there grew two or three trees, inclined towards the west, their branches projecting in that direction. Quite behind, in the south-west, extended the border of the forest.

At this moment, Top became very excited. He ran forward, then returned, and seemed to entreat them to hasten their steps. The dog then left the beach, and guided by his wonderful instinct, without showing the least hesitation, went straight in amongst the downs. They followed him. The country appeared an absolute desert. Not a living creature was to be seen.

The downs, the extent of which was large, were composed of hillocks and even of hills, very irregularly dis-

tributed. They resembled a Switzerland modelled in sand, and only an amazing instinct could have possibly recognized the way.

Five minutes after having left the beach, the reporter and his two companions arrived at a sort of excavation, hollowed out at the back of a high mound. There Top stopped, and gave a loud, clear bark. Spilett, Herbert, and Pencroft dashed into the cave.

Neb was there, kneeling beside a body extended on a bed of grass—

The body was that of the engineer, Cyrus Harding.

CHAPTER VIII

IS CYRUS HARDING LIVING?—NEB'S RECITAL—FOOT-PRINTS—AN UNANSWERABLE QUESTION—CYRUS HARDING'S FIRST WORDS—IDENTIFYING THE FOOT-STEPS—RETURN TO THE CHIMNEYS—PENCROFT STARTLED!

NEB did not move. Pencroft only uttered one word.

"Living?" he cried.

Neb did not reply. Spilett and the sailor turned pale. Herbert clasped his hands, and remained motionless. The poor negro, absorbed in his grief, evidently had neither seen his companions nor heard the sailor speak.

The reporter knelt down beside the motionless body, and placed his ear to the engineer's chest, having first torn open his clothes.

A minute—an age!—passed, during which he endeavoured to catch the faintest throb of the heart.

Neb had raised himself a little and gazed without seeing.

Despair had completely changed his countenance. He could scarcely be recognized, exhausted with fatigue, broken with grief. He believed his master was dead.

Gideon Spilett at last rose, after a long and attentive examination.

"He lives!" said he.

Pencroft knelt in his turn beside the engineer, he also heard a throbbing, and even felt a slight breath on his cheek.

Herbert at a word from the reporter ran out to look for water. He found, a hundred feet off, a limpid stream, which seemed to have been greatly increased by the rains, and which filtered through the sand ; but nothing in which to put the water, not even a shell amongst the downs. The lad was obliged to content himself with dipping his handkerchief in the stream, and with it hastened back to the grotto.

Happily the wet handkerchief was enough for Gideon Spilett, who only wished to wet the engineer's lips. The cold water produced an almost immediate effect. His chest heaved and he seemed to try to speak.

"We will save him !" exclaimed the reporter.

At these words hope revived in Neb's heart. He undressed his master to see if he was wounded, but not so much as a bruise was to be found, either on the head, body, or limbs, which was surprising, as he must have been

dashed against the rocks ; even the hands were uninjured, and it was difficult to explain how the engineer showed no traces of the efforts which he must have made to get out of reach of the breakers.

But the explanation would come later. When Cyrus was able to speak he would say what had happened. For the present the question was, how to recall him to life, and it appeared likely that rubbing would bring this about ; so they set to work with the sailor's jersey.

The engineer, revived by this rude shampooing, moved his arm slightly, and began to breathe more regularly. - He was sinking from exhaustion, and certainly, had not the reporter and his companions arrived, it would have been all over with Cyrus Harding.

"You thought your master was dead, didn't you?" said the seaman to Neb.

"Yes! quite dead!" replied Neb, "and if Top had not found you, and brought you here, I should have buried my master, and then have lain down on his grave to die!"

It had indeed been a narrow escape for Cyrus Harding!

Ned then recounted what had happened. The day before, after having left the Chimneys at daybreak, he had ascended the coast in a northerly direction, and had reached that part of the shore which he had already visited.

There, without any hope he acknowledged, Neb had searched the beach, among the rocks, on the sand, for the

smallest trace to guide him. He examined particularly that part of the beach which was not covered by the high tide, for near the sea the water would have obliterated all marks. Neb did not expect to find his master living. It was for a corpse that he searched, a corpse which he wished to bury with his own hands!

He sought long in vain. This desert coast appeared never to have been visited by a human creature. The shells, those which the sea had not reached, and which might be met with by millions above high-water mark, were untouched. Not a shell was broken.

Neb then resolved to walk along the beach for some miles. It was possible that the waves had carried the body to quite a distant point. When a corpse floats a little distance from a low shore, it rarely happens that the tide does not throw it up, sooner or later. This Neb knew, and he wished to see his master again for the last time.

"I went along the coast for another two miles, carefully examining the beach, both at high and low water, and I had despaired of finding anything, when yesterday, about five in the evening, I saw footprints on the sand."

"Footprints?" exclaimed Pencroft.

"Yes!" replied Neb.

"Did these footprints begin at the water's edge?" asked the reporter.

"No," replied Neb, "only above high-water mark, for the others must have been washed out by the tide."

"Go on, Neb," said Spilett.

'I went half crazy when I saw these footprints. They were very clear and went towards the downs. I followed them for a quarter of a mile, running, but taking care not to destroy them. Five minutes after, as it was getting dark, I heard the barking of a dog. It was Top, and Top brought me here, to my master!'"

Neb ended his account by saying what had been his grief at finding the inanimate body, in which he vainly sought for the least sign of life. Now that he had found him dead he longed for him to be alive. All his efforts were useless! Nothing remained to be done but to render the last duties to the one whom he had loved so much! Neb then thought of his companions. They, no doubt, would wish to see the unfortunate man again. Top was there. Could he not rely on the sagacity of the faithful animal? Neb several times pronounced the name of the reporter, the one among his companions whom Top knew best. Then he pointed to the south, and the dog bounded off in the direction indicated to him.

We have heard how, guided by an instinct which might be looked upon almost as supernatural, Top had found them.

Neb's companions had listened with great attention to this account.

It was unaccountable to them how Cyrus Harding, after the efforts which he must have made to escape from the waves by crossing the rocks, had not received even a scratch. And what could not be explained either was how the engineer had managed to get to this cave in the downs, more than a mile from the shore.

"So, Neb," said the reporter, "it was not you who brought your master to this place."

"No, it was not I," replied the negro.

"It's very clear that the Captain came here by himself," said Pencroft.

"It is clear in reality," observed Spilett, "but it is not credible!"

The explanation of this fact could only be procured from the engineer's own lips, and they must wait for that till speech returned. Rubbing had re-established the circulation of the blood. Cyrus Harding moved his arm again, then his head, and a few incomprehensible words escaped him.

Neb, who was bending over him, spoke, but the engineer did not appear to hear, and his eyes remained closed. Life was only exhibited in him by movement, his senses had not as yet been restored.

Pencroft much regretted not having either fire, or the means of procuring it, for he had, unfortunately, forgotten to bring the burnt linen, which would easily have

ignited from the spark produced by striking together two flints. As to the engineer's pockets, they were entirely empty, except that of his waistcoat, which contained his watch. It was necessary to carry Harding to the Chimneys, and that as soon as possible. This was the opinion of all.

Meanwhile, the care which was lavished on the engineer brought him back to consciousness sooner than they could have expected. The water with which they wetted his lips revived him gradually. Pencroft also thought of mixing with the water some moisture from the tétra's flesh which he had brought. Herbert ran to the beach and returned with two large bivalve shells. The sailor concocted something which he introduced between the lips of the engineer, who eagerly drinking it opened his eyes.

Neb and the reporter were leaning over him.

"My master ! my master !" cried Neb.

The engineer heard him. He recognized Neb and Spilett, then his other two companions, and his hand slightly pressed theirs.

A few words again escaped him, which showed what thoughts were, even then, troubling his brain. This time he was understood. Undoubtedly they were the same words he had before attempted to utter.

"Island or continent ?" he murmured.

"Bother the continent," cried Pencroft hastily ; "there is

time enough to see about that, captain! we don't care for anything, provided you are living."

The engineer nodded faintly, and then appeared to sleep.

They respected this sleep, and the reporter began immediately to make arrangements for transporting Harding to a more comfortable place. Neb, Herbert, and Pencroft left the cave and directed their steps towards a high mound crowned with a few distorted trees. On the way the sailor could not help repeating,—

"Island or continent! To think of that, when at one's last gasp! What a man!"

Arrived at the summit of the mound, Pencroft and his two companions set to work, with no other tools than their hands, to despoil of its principal branches a rather sickly tree, a sort of marine fir; with these branches they made a litter, on which, covered with grass and leaves, they could carry the engineer.

This occupied them nearly forty minutes, and it was ten o'clock when they returned to Cyrus Harding, whom Spilett had not left.

The engineer was just awaking from the sleep, or rather from the drowsiness, in which they had found him. The colour was returning to his cheeks, which till now had been as pale as death. He raised himself a little, looked around him, and appeared to ask where he was.

"Can you listen to me without fatigue, Cyrus?" asked the reporter.

"Yes," replied the engineer.

"It's my opinion," said the sailor, "that Captain Harding will be able to listen to you still better, if he will have some more tétra jelly,—for we have tétras, captain," added he, presenting him with a little of this jelly, to which he this time added some of the flesh.

Cyrus Harding ate a little of the tétra, and the rest was divided among his companions, who found it but a meagre breakfast, for they were suffering extremely from hunger.

"Well!" said the sailor, "there is plenty of food at the Chimneys, for you must know, captain, that down there, in the south, we have a house, with rooms, beds, and fire-place, and in the pantry, several dozen of birds, which our Herbert calls couroucous. Your litter is ready, and as soon as you feel strong enough we will carry you home."

"Thanks, my friend," replied the engineer; "wait another hour or two, and then we will set out. And now speak, Spilett."

The reporter then told him all that had occurred. He recounted all the events with which Cyrus was unacquainted, the last fall of the balloon, the landing on this unknown land, which appeared a desert (whatever it was, whether island or continent), the discovery of the Chimneys, the search for him, not forgetting of course Neb's devo-

tion, the intelligence exhibited by the faithful Top, as well as many other matters.

"But," asked Harding, in a still feeble voice, "you did not, then, pick me up on the beach?"

"No," replied the reporter.

"And did you not bring me to this cave?"

"No."

"At what distance is this cave from the sea?"

"About a mile," replied Pencroft; "and if you are astonished, captain, we are not less surprised ourselves at seeing you in this place!"

"Indeed," said the engineer, who was recovering gradually, and who took great interest in these details, "indeed it is very singular!"

"But," resumed the sailor, "can you tell us what happened after you were carried off by the sea?"

Cyrus Harding considered. He knew very little. The wave had torn him from the balloon net. He sank at first several fathoms. On returning to the surface, in the half light, he felt a living creature struggling near him. It was Top, who had sprung to his help. He saw nothing of the balloon, which, lightened both of his weight and that of the dog, had darted away like an arrow.

There he was, in the midst of the angry sea, at a distance which could not be less than half a mile from the shore. He attempted to struggle against the billows by

swimming vigorously. Top held him up by his clothes ; but a strong current seized him and drove him towards the north, and after half an hour of exertion, he sank, dragging Top with him into the depths. From that moment to the moment in which he recovered to find himself in the arms of his friends he remembered nothing.

"However," remarked Pencroft, "you must have been thrown on to the beach, and you must have had strength to walk here, since Neb found your footmarks !"

"Yes . . . of course . . ." replied the engineer, thoughtfully ; "and you found no traces of human beings on this coast ?"

"Not a trace," replied the reporter ; "besides, if by chance you had met with some deliverer there, just in the nick of time, why should he have abandoned you after having saved you from the waves ?"

"You are right, my dear Spilett. Tell me, Neb," added the engineer, turning to his servant, "it was not you who . . . you can't have had a moment of unconsciousness . . . during which . . . no, that's absurd. . . . Do any of the footsteps still remain ?" asked Harding.

"Yes, master," replied Neb ; "here, at the entrance, at the back of the mound, in a place sheltered from the rain and wind. The storm has destroyed the others."

"Pencroft," said Cyrus Harding, "will you take my shoe and see if it fits exactly to the footprints ?"

The sailor did as the engineer requested. Whilst he and Herbert, guided by Neb, went to the place where the footprints were to be found, Cyrus remarked to the reporter,—

“It is a most extraordinary thing!”

“Perfectly inexplicable!” replied Gideon Spilett.

“But do not dwell upon it just now, my dear Spilett, we will talk about it by-and-by.”

A moment after the others entered.

There was no doubt about it. The engineer's shoe fitted exactly to the footmarks. It was therefore Cyrus Harding who had left them on the sand.

“Come,” said he, “I must have experienced this unconsciousness which I attributed to Neb. I must have walked like a somnambulist, without any knowledge of my steps, and Top must have guided me here, after having dragged me from the waves . . . Come, Top! Come, old dog!”

The magnificent animal bounded barking to his master, and caresses were lavished on him. It was agreed that there was no other way of accounting for the rescue of Cyrus Harding, and that Top deserved all the honour of the affair.

Towards twelve o'clock, Pencroft having asked the engineer if they could now remove him, Harding, instead of replying, and by an effort which exhibited the most

energetic will, got up. But he was obliged to lean on the sailor, or he would have fallen.

"Well done!" said Pencroft; "bring the captain's litter."

The litter was brought; the transverse branches had been covered with leaves and long grass. Harding was laid on it, and Pencroft, having taken his place at one end and Neb at the other, they started towards the coast. There was a distance of eight miles to be accomplished; but, as they could not go fast, and it would perhaps be necessary to stop frequently, they reckoned that it would take at least six hours to reach the Chimneys. The wind was still strong, but fortunately it did not rain. Although lying down, the engineer, leaning on his elbow, observed the coast, particularly inland. He did not speak, but he gazed; and, no doubt, the appearance of the country, with its inequalities of ground, its forests, its various productions, were impressed on his mind. However, after travelling for two hours, fatigue overcame him, and he slept.

At half-past five the little band arrived at the precipice, and a short time after at the Chimneys.

They stopped, and the litter was placed on the sand; Cyrus Harding was sleeping profoundly, and did not awake.

Pencroft, to his extreme surprise, found that the terrible storm had quite altered the aspect of the place. Important

changes had occurred ; great blocks of stone lay on the beach, which was also covered with a thick carpet of seaweed, algæ, and wrack. Evidently the sea, passing over the islet, had been carried right up to the foot of the enormous curtain of granite. The soil in front of the cave had been torn away by the violence of the waves. A horrid presentiment flashed across Pencroft's mind. He rushed into the passage, but returned almost immediately, and stood motionless, staring at his companions. . . . The fire was out ; the drowned cinders were nothing but mud ; the burnt linen, which was to have served as tinder, had disappeared ! The sea had penetrated to the end of the passages, and everything was overthrown and destroyed in the interior of the Chimneys !

CHAPTER IX.

CYRUS IS HERE—PENCROFT'S ATTEMPTS—RUBBING WOOD
—ISLAND OR CONTINENT—THE ENGINEER'S PRO-
JECTS—IN WHAT PART OF THE PACIFIC OCEAN—IN
THE MIDST OF THE FORESTS—THE STONE PINE—
CHASING A CAPYBARA—AN AUSPICIOUS SMOKE.

IN a few words, Gideon Spilett, Herbert, and Neb were made acquainted with what had happened. This accident, which appeared so very serious to Pencroft, produced different effects on the companions of the honest sailor.

Neb, in his delight at having found his master, did not listen, or rather, did not care to trouble himself with what Pencroft was saying.

Herbert shared in some degree the sailor's feelings.

As to the reporter, he simply replied,—

“Upon my word, Pencroft, it's perfectly indifferent to me!”

"But, I repeat, that we haven't any fire!"

"Pooh!"

"Nor any means of relighting it!"

"Nonsense!"

"But I say, Mr. Spilett—"

"Isn't Cyrus here?" replied the reporter.

"Is not our engineer alive? He will soon find some way of making fire for us!"

"With what?"

"With nothing."

What had Pencroft to say? He could say nothing, for, in the bottom of his heart he shared the confidence which his companions had in Cyrus Harding. The engineer was to them a microcosm, a compound of every science, a possessor of all human knowledge. It was better to be with Cyrus in a desert island, than without him in the most flourishing town in the United States. With him they could want nothing; with him they would never despair. If these brave men had been told that a volcanic eruption would destroy the land, that this land would be engulfed in the depths of the Pacific, they would have imperturbably replied,—

"Cyrus is here!"

While in the palanquin, however, the engineer had again relapsed into unconsciousness, which the jolting to which he had been subjected during his journey had brought on,

so that they could not now appeal to his ingenuity. The supper must necessarily be very meagre. In fact, all the téttras' flesh had been consumed, and there no longer existed any means of cooking more game. Besides, the couroucous which had been reserved had disappeared. They must consider what was to be done,

First of all, Cyrus Harding was carried into the central passage. There they managed to arrange for him a couch of sea-weed which still remained almost dry. The deep sleep which had overpowered him would no doubt be more beneficial to him than any nourishment.

Night had closed in, and the temperature, which had modified when the wind shifted to the north-west, again became extremely cold. Also, the sea having destroyed the partitions which Pencroft had put up in certain places in the passages, the Chimneys, on account of the draughts, had become scarcely habitable. The engineer's condition would, therefore, have been bad enough, if his companions had not carefully covered him with their coats and waist-coats.

Supper, this evening, was of course composed of the inevitable lithodomes, of which Herbert and Neb picked up a plentiful supply on the beach. However, to these molluscs, the lad added some edible sea-weed, which he gathered on high rocks, whose sides were only washed by the sea at the time of high tides. This sea-weed, which belongs to the

order of *Sucacæ*, of the genus *Sargussum*, produces, when dry, a gelatinous matter, rich and nutritious. The reporter and his companions, after having eaten a quantity of lithodomes, sucked the *sargussum*, of which the taste was very tolerable. It is used in parts of the East very considerably by the natives. "Never mind!" said the sailor, "the captain will help us soon." Meanwhile the cold became very severe, and unhappily they had no means of defending themselves from it.

The sailor, extremely vexed, tried in all sorts of ways to procure fire. Neb helped him in this work. He found some dry moss, and by striking together two pebbles he obtained some sparks, but the moss, not being inflammable enough, did not take fire, for the sparks were really only incandescent, and not at all of the same consistency as those which are emitted from flint when struck in the same manner. The experiment, therefore, did not succeed.

Pencroft, although he had no confidence in the proceeding, then tried rubbing two pieces of dry wood together, as savages do. Certainly, the movement which he and Neb gave themselves, if they had been transformed into heat, according to the new theory, would have been enough to heat the boiler of a steamer! It came to nothing. The bits of wood became hot, to be sure, but much less so than the operators themselves.

After working an hour, Pencroft, who was in a complete state of perspiration, threw down the pieces of wood in disgust.

"I can never be made to believe that savages light their fires in this way, let them say what they will," he exclaimed. "I could sooner light my arms by rubbing them against each other!"

The sailor was wrong to despise the proceeding. Savages often kindle wood by means of rapid rubbing. But every sort of wood does not answer for the purpose, and besides, there is "the knack," following the usual expression, and it is probable that Pencroft had not "the knack."

Pencroft's ill humour did not last long. Herbert had taken the bits of wood which he had thrown down, and was exerting himself to rub them. The hardy sailor could not restrain a burst of laughter on seeing the efforts of the lad to succeed where he had failed.

"Rub, my boy, rub!" said he.

"I am rubbing," replied Herbert, laughing, "but I don't pretend to do anything else but warm myself instead of shivering, and soon I shall be as hot as you are, my good Pencroft!"

This soon happened. However, they were obliged to give up, for this night at least, the attempt to procure fire. Gideon Spilett repeated, for the twentieth time, that Cyrus

Harding would not have been troubled for so small a difficulty. And, in the meantime, he stretched himself in one of the passages on his bed of sand. Herbert, Neb, and Pencroft did the same, whilst Top slept at his master's feet.

Next day, the 28th of March, when the engineer awoke, about eight in the morning, he saw his companions around him watching his sleep, and, as on the day before, his first words were :—

“Island or continent?”

This was his uppermost thought.

“Well!” replied Pencroft, “we don’t know anything about it, captain!”

“You don’t know yet?”

“But we shall know,” rejoined Pencroft, “when you have guided us into the country.”

“I think I am able to try it,” replied the engineer, who, without much effort, rose and stood upright.

“That’s capital!” cried the sailor.

“I feel dreadfully weak,” replied Harding. “Give me something to eat, my friends, and it will soon go off. You have fire, haven’t you?”

This question was not immediately replied to. But, in a few seconds—

“Alas! we have no fire,” said Pencroft, “or rather, captain, we have it no longer!”

And the sailor recounted all that had passed the day

before. He amused the engineer by the history of the single match, then his abortive attempt to procure fire in the savages' way.

"We shall consider," replied the engineer, "and if we do not find some substance similar to tinder—"

"Well?" asked the sailor.

"Well, we will make matches."

"Chemicals?"

"Chemicals!"

"It is not more difficult than that," cried the reporter, striking the sailor on the shoulder.

The latter did not think it so simple, but he did not protest. All went out. The weather had become very fine. The sun was rising from the sea's horizon, and touched with golden spangles the prismatic rugosities of the huge precipice.

Having thrown a rapid glance around him, the engineer seated himself on a block of stone. Herbert offered him a few handfuls of shell-fish and sargussum, saying,—

"It is all that we have, Captain Harding."

"Thanks, my boy," replied Harding; "it will do—for this morning at least."

He ate the wretched food with appetite, and washed it down with a little fresh water, drawn from the river in an immense shell.

His companions looked at him without speaking. Then,

feeling somewhat refreshed, Cyrus Harding crossed his arms, and said,—

“So, my friends, you do not know yet whether fate has thrown us on an island, or on a continent?”

“No, captain,” replied the boy.

“We shall know to-morrow,” said the engineer; “till then, there is nothing to be done.”

“Yes,” replied Pencroft.

“What?”

“Fire,” said the sailor, who, also, had a fixed idea.

“We will make it, Pencroft,” replied Harding.

“Whilst you were carrying me yesterday, did I not see in the west a mountain which commands the country?”

“Yes,” replied Spilett, “a mountain which must be rather high—”

“Well,” replied the engineer, “we will climb to the summit to-morrow, and then we shall see if this land is an island or a continent. Till then, I repeat, there is nothing to be done.”

“Yes, fire!” said the obstinate sailor again.

“But he will make us a fire!” replied Gideon Spilett, “only have a little patience, Pencroft!”

The seaman looked at Spilett in a way which seemed to say, “If it depended upon you to do it, we wouldn’t taste roast meat very soon;” but he was silent.

Meanwhile Captain Harding had made no reply. He

appeared to be very little troubled by the question of fire. For a few minutes he remained absorbed in thought ; then again speaking,—

“My friends,” said he, “our situation is, perhaps, deplorable ; but, at any rate, it is very plain. Either we are on a continent, and then, at the expense of greater or less fatigue, we shall reach some inhabited place, or we are on an island. In the latter case, if the island is inhabited, we will try to get out of the scrape with the help of its inhabitants ; if it is desert, we will try to get out of the scrape by ourselves.”

“Certainly, nothing could be plainer,” replied Pencroft.

“But, whether it is an island or a continent,” asked Gideon Spilett, “whereabouts do you think, Cyrus, this storm has thrown us ?”

“I cannot say exactly,” replied the engineer, “but I presume it is some land in the Pacific. In fact, when we left Richmond, the wind was blowing from the north-east, and its very violence greatly proves that it could not have varied. If the direction has been maintained from the north-east to the south-west, we have traversed the States of North Carolina, of South Carolina, of Georgia, the Gulf of Mexico, Mexico itself, in its narrow part, then a part of the Pacific Ocean. I cannot estimate the distance traversed by the balloon at less than six to seven thousand miles, and, even supposing that the wind had varied half a quarter, it must

have brought us either to the archipelago of Mendava, either on the Pomotous, or even, if it had a greater strength than I suppose, to the land of New Zealand. If the last hypothesis is correct, it will be easy enough to get home again. English or Maoris, we shall always find some one to whom we can speak. If, on the contrary, this is the coast of a desert island in some tiny archipelago, perhaps we shall be able to reconnoitre it from the summit of that peak which overlooks the country, and then we shall see how best to establish ourselves here as if we are never to go away."

"Never?" cried the reporter. "You say 'Never,' my dear Cyrus?"

"Better to put things at the worst at first," replied the engineer, "and reserve the best for a surprise."

"Well said," remarked Pencroft. "It is to be hoped, too, that this island, if it be one, is not situated just out of the course of ships; that would be really unlucky!"

"We shall not know what we have to rely on until we have first made the ascent of the mountain," replied the engineer.

"But to-morrow, captain," asked Herbert, "shall you be in a state to bear the fatigue of the ascent?"

"I hope so," replied the engineer, "provided you and Pencroft, my boy, show yourselves quick and clever hunters."

"Captain," said the sailor, "since you are speaking of game, if, on my return, I was as certain of being able to roast it as I am of bringing it back—"

"Bring it back all the same, Pencroft," replied Harding.

It was then agreed that the engineer and the reporter were to pass the day at the Chimneys, so as to examine the shore and the upper plateau. Neb, Herbert, and the sailor, were to return to the forest, renew their store of wood, and lay violent hands on every creature, feathered or hairy, which might come within their reach.

They set out accordingly about ten o'clock in the morning, Herbert confident, Neb joyous, Pencroft murmuring aside,—

"If, on my return, I find a fire at the house, I shall believe that the thunder itself came to light it." All three climbed the bank; and arrived at the angle made by the river, the sailor, stopping, said to his two companions,—

"Shall we begin by being hunters or wood-men?"

"Hunters," replied Herbert. "There is Top already in quest."

"We will hunt, then," said the sailor, "and afterwards we can come back and collect our wood."

This agreed to, Herbert, Neb, and Pencroft, after having torn three sticks from the trunk of a young fir, followed Top, who was bounding about amongst the long grass.

This time, the hunters, instead of following the course of the river, plunged straight into the heart of the forest.

There were still the same trees, belonging, for the most part, to the pine family. In certain places, less crowded, growing in clumps, these pines exhibited considerable dimensions, and appeared to indicate, by their development, that the country was situated in a higher latitude than the engineer had supposed. Glades, bristling with stumps worn away by time, were covered with dry wood, which formed an inexhaustible store of fuel. Then, the glade passed, the underwood thickened again, and became almost impenetrable.

It was difficult enough to find the way amongst the groups of trees, without any beaten track. So the sailor from time to time broke off branches which might be easily recognized. But, perhaps, he was wrong not to follow the watercourse, as he and Herbert had done on their first excursion, for after walking an hour not a creature had shown itself. Top, running under the branches, only roused birds which could not be approached. Even the couroucous were invisible, and it was probable that the sailor would be obliged to return to the marshy part of the forest, in which he had so happily performed his tétra fishing.

"Well, Pencroft," said Neb, in a slightly sarcastic tone, "if this is all the game which you promised to bring back to my master, it won't need a large fire to roast it!"

"Have patience," replied the sailor, "it isn't the game which will be wanting on our return."

"Have you not confidence in Captain Harding?"

"Yes."

"But you don't believe that he will make fire?"

"I shall believe it when the wood is blazing in the fire-place."

"It will blaze, since my master has said so."

"We shall see!"

Meanwhile, the sun had not reached the highest point in its course above the horizon. The exploration, therefore, continued, and was usefully marked by a discovery which Herbert made of a tree whose fruit was edible. This was the stone-pine, which produces an excellent almond, very much esteemed in the temperate regions of America and Europe. These almonds were in a perfect state of maturity, and Herbert described them to his companions, who feasted on them.

"Come," said Pencroft, "sea-weed by way of bread, raw mussels for meat, and almonds for dessert, that's certainly a good dinner for those who have not a single match in their pocket!"

"We mustn't complain," said Herbert.

"I am not complaining, my boy," replied Pencroft, "only I repeat, that meat is a little too much economized in this sort of meal."

"Top has found something!" cried Neb, who ran towards a thicket, in the midst of which the dog had disappeared,

barking. With Top's barking were mingled curious gruntings.

The sailor and Herbert had followed Neb. If there was game there this was not the time to discuss how it was to be cooked, but rather, how they were to get hold of it.

The hunters had scarcely entered the bushes when they saw Top engaged in a struggle with an animal which he was holding by the ear. This quadruped was a sort of pig nearly two feet and a half long, of a blackish brown colour, lighter below, having hard scanty hair; its toes, then strongly fixed in the ground, seemed to be united by a membrane. Herbert recognized in this animal the capybara, that is to say, one of the largest members of the rodent order.

Meanwhile, the capybara did not struggle against the dog. It stupidly rolled its eyes, deeply buried in a thick bed of fat. Perhaps it saw men for the first time.

However, Neb having tightened his grasp on his stick, was just going to fell the pig, when the latter, tearing itself from Top's teeth, by which it was only held by the tip of its ear, uttered a vigorous grunt, rushed upon Herbert, almost overthrew him, and disappeared in the wood.

"The rascal!" cried Pencroft.

All three directly darted after Top, but at the moment when they joined him the animal had disappeared under the waters of a large pond shaded by venerable pines.

Neb, Herbert, and Pencroft stopped, motionless. Top plunged into the water, but the capybara, hidden at the bottom of the pond, did not appear.

"Let us wait," said the boy, "for he will soon come to the surface to breathe."

"Won't he drown?" asked Neb.

"No," replied Herbert, "since he has webbed feet, and is almost an amphibious animal. But watch him."

Top remained in the water. Pencroft and his two companions went to different parts of the bank, so as to cut off the retreat of the capybara, which the dog was looking for beneath the water.

Herbert was not mistaken. In a few minutes the animal appeared on the surface of the water. Top was upon it in a bound, and kept it from plunging again. An instant later the capybara, dragged to the bank, was killed by a blow from Neb's stick.

"Hurrah!" cried Pencroft, who was always ready with this cry of triumph.

"Give me but a good fire, and this pig shall be gnawed to the bones!"

Pencroft hoisted the capybara on his shoulders, and judging by the height of the sun that it was about two o'clock, he gave the signal to return.

Top's instinct was useful to the hunters, who, thanks to the intelligent animal, were enabled to discover the road

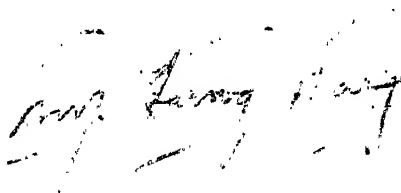
by which they had come. Half an hour later they arrived at the river.

Pencroft soon made a raft of wood, as he had done before, though if there was no fire it would be a useless task, and the raft following the current, they returned towards the Chimneys.

But the sailor had not gone fifty paces when he stopped, and again uttering a tremendous hurrah, pointed towards the angle of the cliff,—

“Herbert! Neb! Look!” he shouted.

Smoke was escaping and curling up amongst the rocks.



CHAPTER X.

THE ENGINEER'S INVENTION—THE QUESTION WHICH ENGROSSES THE THOUGHTS OF CYRUS HARDING—DEPARTURE FOR THE MOUNTAIN—VOLCANIC SOIL—TRAGOPANS—SHEEP—THE FIRST PLATEAU—ENCAMPMENT FOR THE NIGHT—THE SUMMIT OF THE CONE.

IN a few minutes the three hunters were before a crackling fire. The captain and the reporter were there. Pencroft looked from one to the other, his capybara in his hand, without saying a word.

"Well, yes, my brave fellow," cried the reporter.

"Fire, real fire, which will roast this splendid pig perfectly, and we will have a feast presently!"

"But who lighted it?" asked Pencroft.

"The sun!"

Gideon Spilett was quite right in his reply. It was the sun which had furnished the heat which so astonished

Pencroft. The sailor could scarcely believe his eyes, and he was so amazed that he did not think of questioning the engineer.

"Had you a burning-glass, sir?" asked Herbert of Harding.

"No, my boy," replied he, "but I made one."

And he showed the apparatus which served for a burning-glass. It was simply two glasses which he had taken from his own and the reporter's watches. Having filled them with water and rendered their edges adhesive by means of a little clay, he thus fabricated a regular burning-glass, which, concentrating the solar rays on some very dry moss, soon caused it to blaze.

The sailor considered the apparatus; then he gazed at the engineer without saying a word, only a look plainly expressed his opinion that if Cyrus Harding was not a magician, he was certainly no ordinary man. At last speech returned to him, and he cried,—

"Note that, Mr. Spilett, note that down on your paper!"

"It is noted," replied the reporter.

Then, Neb helping him, the seaman arranged the spit, and the capybara, properly cleaned, was soon roasting like a sucking-pig before a clear, crackling fire.

The Chimneys had again become more habitable, not only because the passages were warmed by the fire, but

because the partitions of wood and mud had been re-established.

It was evident that the engineer and his companions had employed their day well. Cyrus Harding had almost entirely recovered his strength, and had proved it by climbing to the upper plateau. From this point his eye, accustomed to estimate heights and distances, was fixed for a long time on the cone, the summit of which he wished to reach the next day. The mountain, situated about six miles to the north-west, appeared to him to measure 3500 feet above the level of the sea. Consequently the gaze of an observer posted on its summit would extend over a radius of at least fifty miles. Therefore it was probable that Harding could easily solve the question of "island or continent," to which he attached so much importance.

They supped capitally. The flesh of the capybara was declared excellent. The sargussum and the almonds of the stone-pine completed the repast, during which the engineer spoke little. He was preoccupied with projects for the next day.

Once or twice Pencroft gave forth some ideas upon what it would be best to do; but Cyrus Harding, who was evidently of a methodical mind, only shook his head without uttering a word.

"To-morrow," he repeated, "we shall know what we have to depend upon, and we will act accordingly."

The meal ended, fresh armfuls of wood were thrown on the fire, and the inhabitants of the Chimneys, including the faithful Top, were soon buried in a deep sleep. No incident disturbed this peaceful night, and the next day, the 29th of March, fresh and active they awoke, ready to undertake the excursion which must determine their fate.

All was ready for the start. The remains of the capybara would be enough to sustain Harding and his companions for at least twenty-four hours. Besides, they hoped to find more food on the way. As the glasses had been returned to the watches of the engineer and reporter, Pencroft burned a little linen to serve as tinder. As to flint, that would not be wanting in these regions of Plutonic origin. It was half-past seven in the morning when the explorers, armed with sticks, left the Chimneys. Following Pencroft's advice, it appeared best to take the road already traversed through the forest, and to return by another route. It was also the most direct way to reach the mountain. They turned the south angle and followed the left bank of the river, which was abandoned at the point where it formed an elbow towards the south-west. The path, already trodden under the evergreen trees, was found, and at nine o'clock Cyrus Harding and his companions had reached the western border of the forest. The ground, till then, very little undulated, boggy at first, dry and sandy afterwards, had a gentle slope, which ascended from the shore towards the interior

of the country. A few very timid animals were seen under the forest-trees. Top quickly started them, but his master soon called him back, for the time had not come to commence hunting, that would be attended to later. The engineer was not a man who would allow himself to be diverted from his fixed idea. It might even have been said that he did not observe the country at all, either in its configuration or in its natural productions, his great aim being to climb the mountain before him, and therefore straight towards it he went. At ten o'clock a halt of a few minutes was made. On leaving the forest, the mountain system of the country appeared before the explorers. The mountain was composed of two cones; the first, truncated at a height of about two thousand five hundred feet, was sustained by buttresses, which appeared to branch out like the talons of an immense claw set on the ground. Between these were narrow valleys, bristling with trees, the last clumps of which rose to the top of the lowest cone. There appeared to be less vegetation on that side of the mountain which was exposed to the north-east, and deep fissures could be seen which, no doubt, were watercourses.

On the first cone rested a second, slightly rounded, and placed a little on one side, like a great round hat cocked over the ear. A Scotchman would have said, "His bonnet was a thocht ajee." It appeared formed of bare earth, here and there pierced by reddish rocks.

They wished to reach the second cone, and proceeding along the ridge of the spurs seemed to be the best way by which to gain it.

"We are on volcanic ground," Cyrus Harding had said, and his companions following him began to ascend by degrees on the back of a spur, which, by a winding and consequently more accessible path, joined the first plateau.

The ground had evidently been convulsed by subterranean force. Here and there stray blocks, numerous *débris* of basalt and pumice-stone, were met with. In isolated groups rose fir-trees, which, some hundred feet lower, at the bottom of the narrow gorges, formed massive shades almost impenetrable to the sun's rays.

During this first part of the ascent, Herbert remarked on the footprints which indicated the recent passage of large animals.

"Perhaps these beasts will not let us pass by willingly," said Pencroft.

"Well," replied the reporter, who had already hunted the tiger in India, and the lion in Africa, "we shall soon learn how successfully to encounter them. But in the meantime we must be upon our guard!"

They ascended but slowly.

The distance increased by *détours* and obstacles which could not be surmounted directly, was long. Sometimes, too, the ground suddenly fell, and they found themselves on

the edge of a deep chasm which they had to go round. Thus, in retracing their steps so as to find some practicable path, much time was employed and fatigue undergone for nothing. At twelve o'clock, when the small band of adventurers halted for breakfast at the foot of a large group of firs, near a little stream which fell in cascades, they found themselves still half way from the first plateau, which most probably they would not reach till nightfall. From this point the view of the sea was much extended, but on the right the high promontory prevented their seeing whether there was land beyond it. On the left, the sight extended several miles to the north; but, on the north-west, at the point occupied by the explorers, it was cut short by the ridge of a fantastically-shaped spur, which formed a powerful support of the central cone.

At one o'clock the ascent was continued. They slanted more towards the south-west and again entered amongst thick bushes. There under the shade of the trees fluttered several couple of gallinaceæ belonging to the pheasant species. They were tragopans, ornamented by a pendant skin which hangs over their throats, and by two small, round horns planted behind the eyes. Among these birds, which were about the size of a fowl, the female was uniformly brown, whilst the male was gorgeous in his red plumage, decorated with white spots. Gideon Spilett, with a stone cleverly and vigorously thrown, killed one of these trago-

pan, on which Pencroft, made hungry by the fresh air, had cast greedy eyes.

After leaving the region of bushes, the party, assisted by resting on each other's shoulders, climbed for about a hundred feet up a steep acclivity and reached a level place, with very few trees, where the soil appeared volcanic. It was necessary to ascend by zigzags to make the slope more easy, for it was very steep, and the footing being exceedingly precarious required the greatest caution. Neb and Herbert took the lead, Pencroft the rear, the captain and the reporter between them. The animals which frequented these heights—and there were numerous traces of them—must necessarily belong to those races of sure foot and supple spine, chamois or goat. Several were seen, but this was not the name Pencroft gave them, for all of a sudden—

“Sheep!” he shouted.

All stopped about fifty feet from half-a-dozen animals of a large size, with strong horns bent back and flattened towards the point, with a woolly fleece, hidden under long silky hair of a tawny colour.

They were not ordinary sheep, but a species usually found in the mountainous regions of the temperate zone, to which Herbert gave the name of the musmon.

“Have they legs and chops?” asked the sailor.

“Yes,” replied Herbert.

“Well, then, they are sheep!” said Pencroft.

The animals, motionless among the blocks of basalt, gazed with an astonished eye, as if they saw human bipeds for the first time. Then, their fears suddenly aroused, they disappeared, bounding over the rocks.

"Good-bye, till we meet again!" cried Pencroft, as he watched them, in such a comical tone that Cyrus Harding, Gideon Spilett, Herbert, and Neb could not help laughing.

The ascent was continued. Here and there were traces of lava. Sulphur springs sometimes stopped their way, and they had to go round them. In some places the sulphur had formed crystals among other substances, such as whitish cinders made of an infinity of little felspar crystals.

In approaching the first plateau formed by the truncating of the lower cone, the difficulties of the ascent were very great. Towards four o'clock the extreme zone of the trees had been passed. There only remained here and there a few twisted, stunted pines, which must have had a hard life in resisting at this altitude the high winds from the open sea. Happily for the engineer and his companions the weather was beautiful, the atmosphere tranquil; for a high breeze at an elevation of three thousand feet would have hindered their proceedings. The purity of the sky at the zenith was felt through the transparent air. A perfect calm reigned around them. They could not see the sun, then hid by the vast screen of the upper cone, which

masked the half-horizon of the west, and whose enormous shadow stretching to the shore increased as the radiant luminary sank in its diurnal course. Vapours—mist rather than clouds—began to appear in the east, and assume all the prismatic colours under the influence of the solar rays.

Five hundred feet only separated the explorers from the plateau, which they wished to reach so as to establish there an encampment for the night, but these five hundred feet were increased to more than two miles by the zigzags which they had to describe. The soil, as it were, slid under their feet. The slope often presented such an angle that they slipped when the stones worn by the air did not give a sufficient support. Evening came on by degrees, and it was almost night when Cyrus Harding and his companions, much fatigued by an ascent of seven hours, arrived at the plateau of the first cone. It was then necessary to prepare an encampment, and to restore their strength by eating first and sleeping afterwards. This second stage of the mountain rose on a base of rocks, among which it would be easy to find a retreat. Fuel was not abundant. However, a fire could be made by means of the moss and dry brushwood, which covered certain parts of the plateau. Whilst the sailor was preparing his hearth with stones which he put to this use, Neb and Herbert occupied themselves with getting a supply of fuel. They soon returned

with a load of brushwood. The steel was struck, the burnt linen caught the sparks of flint, and, under Neb's breath, a crackling fire showed itself in a few minutes under the shelter of the rocks. Their object in lighting a fire was only to enable them to withstand the cold temperature of the night, as it was not employed in cooking the bird, which Neb kept for the next day. The remains of the capybara and some dozens of the stone-pine almonds formed their supper. It was not half-past six when all was finished.

Cyrus Harding then thought of exploring in the half-light the large circular layer which supported the upper cone of the mountain. Before taking any rest, he wished to know if it was possible to get round the base of the cone in the case of its sides being too steep and its summit being inaccessible. This question preoccupied him, for it was possible that from the way the hat inclined, that is to say, towards the north, the plateau was not practicable. Also, if the summit of the mountain could not be reached on one side, and if, on the other, they could not get round the base of the cone, it would be impossible to survey the western part of the country, and their object in making the ascent would in part be altogether unattained.

The engineer, accordingly, regardless of fatigue, leaving Pencroft and Neb to arrange the beds, and Gideon Spilett to note the incidents of the day, began to follow

the edge of the plateau, going towards the north. Herbert accompanied him.

The night was beautiful and still, the darkness was not yet deep. Cyrus Harding and the boy walked near each other, without speaking. In some places the plateau opened before them, and they passed without hindrance. In others, obstructed by rocks, there was only a narrow path, in which two persons could not walk abreast. After a walk of twenty minutes, Cyrus Harding and Herbert were obliged to stop. From this point the slope of the two cones became one. No shoulder here separated the two parts of the mountain. The slope, being inclined almost seventy degrees, the path became impracticable.

But if the engineer and the boy were obliged to give up thoughts of following a circular direction, in return an opportunity was given for ascending the cone.

In fact, before them opened a deep hollow. It was the rugged mouth of the crater, by which the eruptive liquid matter had escaped at the periods when the volcano was still in activity. Hardened lava and crusted scoria formed a sort of natural staircase of large steps, which would greatly facilitate the ascent to the summit of the mountain.

Harding took all this in at a glance, and without hesitating, followed by the lad, he entered the enormous chasm in the midst of an increasing obscurity.

There was still a height of a thousand feet to overcome

Would the interior acclivities of the crater be practicable? It would soon be seen. The persevering engineer resolved to continue his ascent until he was stopped. Happily these acclivities wound up the interior of the volcano and favoured their ascent. ♪

As to the volcano itself, it could not be doubted that it was completely extinct. No smoke escaped from its sides; not a flame could be seen in the dark hollows; not a roar, not a mutter, no trembling even issued from this black well, which perhaps reached far into the bowels of the earth. The atmosphere inside the crater was filled with no sulphurous vapour. It was more than the sleep of a volcano; it was its complete extinction. Cyrus Harding's attempt would succeed.

Little by little, Herbert and he, climbing up the sides of the interior, saw the crater widen above their heads. The radius of this circular portion of the sky, framed by the edge of the cone, increased obviously. At each step, as it were, that the explorers made, fresh stars entered the field of their vision. The magnificent constellations of the southern sky shone resplendently. At the zenith glittered the splendid Antares in the Scorpion, and not far the β in the Centaur, which is believed to be the nearest star to the terrestrial globe. Then, as the crater widened, appeared Fomalhaut of the Fish, the Southern Triangle, and lastly, nearly at the Antarctic Pole, the glittering Southern Cross,

which replaces the Polar Star of the Northern Hemisphere.

It was nearly eight o'clock when Cyrus Harding and Herbert set foot on the highest ridge of the mountain at the summit of the cone.

It was then perfectly dark, and their gaze could not extend over a radius of two miles. Did the sea surround this unknown land, or was it connected in the west with some continent of the Pacific? It could not yet be made out. Towards the west, a cloudy belt, clearly visible at the horizon, increased the gloom, and the eye could not discover if the sky and water were blended together in the same circular line.

But at one point of the horizon a vague light suddenly appeared, which descended slowly in proportion as the cloud mounted to the zenith.

It was the slender crescent moon, already almost disappearing; but its light was sufficient to show clearly the horizontal line, then detached from the cloud, and the engineer could see its reflection trembling for an instant on a liquid surface. Cyrus Harding seized the lad's hand, and in a grave voice,—

“An island!” said he, at the moment when the lunar crescent disappeared beneath the waves.

CHAPTER XI.

AT THE SUMMIT OF THE CONE—THE INTERIOR OF THE CRATER—SEA ALL ROUND—NO LAND IN SIGHT—A BIRD'S-EYE VIEW OF THE COAST—HYDROGRAPHY AND OROLOGY—IS THE ISLAND INHABITED—CHRISTENING THE BAYS, GULFS, CAPES, RIVERS, ETC.—LINCOLN ISLAND.

HALF an hour later Cyrus Harding and Herbert had returned to the encampment. The engineer merely told his companions that the land upon which fate had thrown them was an island, and that the next day they would consult. Then each settled himself as well as he could to sleep, and in that rocky hole, at a height of two thousand five hundred feet above the level of the sea, through a peaceful night, the islanders enjoyed profound repose.

The next day, the 30th of March, after a hasty breakfast, which consisted solely of the roasted tragopan, the engineer wished to climb again to the summit of the

volcans, so as more attentively to survey the island upon which he and his companions were imprisoned for life perhaps, should the island be situated at a great distance from any land, or if it was out of the course of vessels which visited the archipelagos of the Pacific Ocean. This time his companions followed him in the new exploration. They also wished to see the island, on the productions of which they must depend for the supply of all their wants.

It was about seven o'clock in the morning when Cyrus Harding, Herbert, Pencroft, Gideon Spilett, and Neb quitted the encampment. No one appeared to be anxious about their situation. They had faith in themselves, doubtless, but it must be observed that the basis of this faith was not the same with Harding as with his companions. The engineer had confidence, because he felt capable of extorting from this wild country everything necessary for the life of himself and his companions; the latter feared nothing, just because Cyrus Harding was with them. Pencroft especially, since the incident of the relighted fire, would not have despaired for an instant, even if he was on a bare rock, if the engineer was with him on the rock.

"Pshaw!" said he, "we left Richmond without permission from the authorities! It will be hard if we don't manage to get away some day or other from a place where certainly no one will detain us!"

Cyrus Harding followed the same road as the evening before. They went round the cone by the plateau which formed the shoulder, to the mouth of the enormous chasm. The weather was magnificent. The sun rose in a pure sky and flooded with his rays all the eastern side of the mountain.

The crater was reached. It was just what the engineer had made it out to be in the dark ; that is to say, a vast funnel which extended, widening, to a height of a thousand feet above the plateau. Below the chasm, large thick streaks of lava wound over the sides of the mountain, and thus marked the course of the eruptive matter to the lower valleys which furrowed the northern part of the island.

The interior of the crater, whose inclination did not exceed thirty-five to forty degrees, presented no difficulties nor obstacles to the ascent. Traces of very ancient lava were noticed, which probably had overflowed the summit of the cone, before this lateral chasm had opened a new way to it.

As to the volcanic chimney which established a communication between the subterranean layers and the crater, its depth could not be calculated with the eye, for it was lost in obscurity. But there was no doubt as to the complete extinction of the volcano.

Before eight o'clock Harding and his companions were

assembled at the summit of the crater, on a conical mound which swelled the northern edge.

"The sea, the sea everywhere!" they cried, as if their lips could not restrain the words which made islanders of them.

The sea, indeed, formed an immense circular sheet of water all around them! Perhaps, on climbing again to the summit of the cone, Cyrus Harding had had a hope of discovering some coast, some island shore, which he had not been able to perceive in the dark the evening before. But nothing appeared on the farthest verge of the horizon, that is to say, over a radius of more than fifty miles. No land in sight. Not a sail. Over all this immense space the ocean alone was visible—the island occupied the centre of a circumference which appeared to be infinite.

The engineer and his companions, mute and motionless, surveyed for some minutes every point of the ocean, examining it to its most extreme limits. Even Pencroft, who possessed a marvellous power of sight, saw nothing; and certainly if there had been land at the horizon, if it appeared only as an indistinct vapour, the sailor would undoubtedly have found it out, for nature had placed regular telescopes under his eyebrows.

From the ocean their gaze returned to the island which they commanded entirely, and the first question was put by Gideon Spilett in these terms:—

"About what size is this island?"

Truly, it did not appear large in the midst of the immense ocean.

Cyrus Harding reflected a few minutes; he attentively observed the perimeter of the island, taking into consideration the height at which he was placed; then,—

"My friends," said he, "I do not think I am mistaken in giving to the shore of the island a circumference of more than a hundred miles."

"And consequently an area?"

"That is difficult to estimate," replied the engineer, "for it is so uneven."

If Cyrus Harding was not mistaken in his calculation, the island had almost the extent of Malta or Zante, in the Mediterranean, but it was at the same time much more irregular and less rich in capes, promontories, points, bays, or creeks. Its strange form caught the eye, and when Gideon Spilett, on the engineer's advice, had drawn the outline, they found that it resembled some fantastic animal, a monstrous leviathan, which lay sleeping on the surface of the Pacific.

This was in fact the exact shape of the island, which it is of consequence to know, and a tolerably correct map of it was immediately drawn by the reporter.

The east part of the shore, where the castaways had landed, formed a wide bay, terminated by a sharp cape,

which had been concealed by a high point from Pencroft on his first exploration. At the north-east two other capes closed the bay, and between them ran a narrow gulf, which looked like the half-open jaws of a formidable dog-fish.

From the north-east to the south-west the coast was rounded, like the flattened cranium of an animal, rising again, forming a sort of protuberance which did not give any particular shape to this part of the island, of which the centre was occupied by the volcano.

From this point the shore ran pretty regularly north and south, broken at two-thirds of its perimeter by a narrow creek, from which it ended in a long tail, similar to the caudal appendage of a gigantic alligator.

This tail formed a regular peninsula, which stretched more than thirty miles into the sea, reckoning from the cape south-east of the island, already mentioned ; it curled round, making an open roadstead, which marked out the lower shore of this strangely-formed land.

At the narrowest part, that is to say between the Chimneys and the creek on the western shore, which corresponded to it in latitude, the island only measured ten miles ; but its greatest length, from the jaws at the north-east to the extremity of the tail on the south-west, was not less than thirty miles.

As to the interior of the island, its general aspect was

this,—very woody throughout the southern part from the mountain to the shore, and arid and sandy in the northern part. Betwen the volcano and the east coast Cyrus Harding and his companions were surprised to see a lake, bordered with green trees, the existence of which they had not suspected. Seen from this height, the lake appeared to be on the same level as the ocean, but, on reflection, the engineer explained to his companions that the altitude of this little sheet of water must be about three hundred feet, because the plateau, which was its basin, was but a prolongation of the coast.

“Is it a freshwater lake?” asked Pencroft.

“Certainly,” replied the engineer, “for it must be fed by the water which flows from the mountain.”

“I see a little river which runs into it,” said Herbert, pointing out a narrow stream, which evidently took its source somewhere in the west.

“Yes,” said Harding; “and since this stream feeds the lake, most probably on the side near the sea there is an outlet by which the surplus water escapes. We shall see that on our return.”

This little winding watercourse and the river already mentioned constituted the water-system, at least such as it was displayed to the eyes of the explorers. However, it was possible that under the masses of trees which covered two-thirds of the island, forming an immense forest, other

rivers ran towards the sea. It might even be inferred that such was the case, so rich did this region appear in the most magnificent specimens of the flora of the temperate zones. There was no indication of running water in the north, though perhaps there might be stagnant water among the marshes in the north-east ; but that was all, in addition to the downs, sand, and aridity which contrasted so strongly with the luxuriant vegetation of the rest of the island.

The volcano did not occupy the central part ; it rose, on the contrary, in the north-western region, and seemed to mark the boundary of the two zones. At the south-west, at the south, and the south-east, the first part of the spurs were hidden under masses of verdure. At the north, on the contrary, one could follow their ramifications, which died away on the sandy plains. It was on this side that, at the time when the mountain was in a state of eruption, the discharge had worn away a passage, and a large heap of lava had spread to the narrow jaw which formed the north-eastern gulf.

Cyrus Harding and his companions remained an hour at the top of the mountain. The island was displayed under their eyes, like a plan in relief with different tints, green for the forests, yellow for the sand, blue for the water. They viewed it in its *toute-ensemble*, nothing remained concealed but the ground hidden by verdure.

the hollows of the valleys, and the interior of the volcanic chasms.

One important question remained to be solved, and the answer would have a great effect upon the future of the castaways.

Was the island inhabited?

It was the reporter who put this question, to which after the close examination they had just made, the answer seemed to be in the negative.


Nowhere could the work of a human hand be perceived. Not a group of huts, not a solitary cabin, not a fishery on the shore. No smoke curling in the air betrayed the presence of man. It is true, a distance of nearly thirty miles separated the observers from the extreme points, that is, of the tail which extended to the south-west, and it would have been difficult, even to Pencroft's eyes, to discover a habitation there. Neither could the curtain of verdure, which covered three-quarters of the island, be raised to see if it did not shelter some straggling village. But in general the islanders live on the shores of the narrow spaces which emerge above the waters of the Pacific, and this shore appeared to be an absolute desert.

Until a more complete exploration, it might be admitted that the island was uninhabited. But was it frequented, at least occasionally, by the natives of neighbouring islands? It was difficult to reply to this question. No land appeared

within a radius of fifty miles. But fifty miles could be easily crossed, either by Malay proas or by the large Polynesian canoes. Everything depended on the position of the island, of its isolation in the Pacific, or of its proximity to archipelagos. Would Cyrus Harding be able to find out their latitude and longitude without instruments? It would be difficult. In the doubt, it was best to take precautions against a possible descent of neighbouring natives.

The exploration of the island was finished, its shape determined, its features made out, its extent calculated, the water and mountain systems ascertained. The disposition of the forests and plains had been marked in a general way on the reporter's plan. They had now only to descend the mountain slopes again, and explore the soil, in the triple point of view, of its mineral, vegetable, and animal resources.

But before giving his companions the signal for departure, Cyrus Harding said to them in a calm, grave voice,—

“Here, my friends, is  a small corner of land upon which the hand of the Almighty has thrown us. We are going to live here; a long time, perhaps. Perhaps, too, unexpected help will arrive, if some ship passes by chance. I say by chance, because this is an unimportant island; there is not even a port in which ships could anchor, and it

is to be feared that it is situated out of the route usually followed, that is to say, too much to the south for the ships which frequent the archipelagos of the Pacific, and too much to the north for those which go to Australia by doubling Cape Horn. I wish to hide nothing of our position from you—"

"And you are right, my dear Cyrus," replied the reporter, with animation. "You have to deal with men. They have confidence in you, and you can depend upon them. Is it not so, my friends?"

"I will obey you in everything, captain," said Herbert, seizing the engineer's hand.

"My master always, and everywhere!" cried Neb.

"As for me," said the sailor, "if I ever grumble at work, my name's not Jack Pencroft, and if you like, captain, we will make a little America of this island! We will build towns, we will establish railways, start telegraphs, and one fine day, when it is quite changed, quite put in order and quite civilized, we will go and offer it to the government of the Union. Only, I ask one thing."

"What is that?" said the reporter.

"It is, that we do not consider ourselves castaways, but colonists, who have come here to settle." Harding could not help smiling, and the sailor's idea was adopted. He then thanked his companions, and added, that he would rely on their energy and on the aid of Heaven.

"Well, now let us set off to the Chimneys!" cried Pencroft.

"One minute, my friends," said the engineer. "It seems to me it would be a good thing to give a name to this island, as well as to the capes, promontories, and water-courses, which we can see."

"Very good," said the reporter. "In the future, that will simplify the instructions which we shall have to give and follow."

"Indeed," said the sailor, "already it is something to be able to say where one is going, and where one has come from. At least, it looks like somewhere."

"The Chimneys, for example," said Herbert.

"Exactly!" replied Pencroft. "That name was the most convenient, and it came to me quite of myself. Shall we keep the name of the Chimneys for our first encampment, captain?"

"Yes, Pencroft, since you have so christened it."

"Good! as for the others, that will be easy," returned the sailor, who was in high spirits. "Let us give them names, as the Robinsons did, whose story Herbert has often read to me; Providence Bay, Whale Point, Cape Disappointment!"

"Or, rather, the names of Captain Harding," said Herbert, "of Mr. Spilett, of Neb!—"

"My name!" cried Neb, showing his sparkling white teeth.

"Why not?" replied Pencroft. "Port Neb, that would do very well! And Cape Gideon—"

"I should prefer borrowing names from our country," said the reporter, "which would remind us of America."

"Yes, for the principal ones," then said Cyrus Harding; "for those of the bays and seas, I admit it willingly. We might give to that vast bay on the east the name of Union Bay, for example; to that large hollow on the south, Washington Bay; to the mountain upon which we are standing, that of Mount Franklin; to that lake which is extended under our eyes, that of Lake Grant; nothing could be better, my friends. These names will recall our country, and those of the great citizens who have honoured it; but for the rivers, gulfs, capes, and promontories, which we perceive from the top of this mountain, rather let us choose names which will recall their particular shape. They will impress themselves better on our memory, and at the same time will be more practical. The shape of the island is so strange that we shall not be troubled to imagine what it resembles. As to the streams which we do not know as yet, in different parts of the forest which we shall explore later, the creeks which afterwards will be discovered, we can christen them as we find them. What do you think, my friends?"

The engineer's proposal was unanimously agreed to by his companions. The island was spread out under their

eyes like a map, and they had only to give names to all its angles and points. Gideon Spilett would write them down, and the geographical nomenclature of the island would be definitively adopted.

First of all, they named the two bays and the mountain, Union Bay, Washington Bay, and Mount Franklin, as the engineer had suggested.

"Now," said the reporter, "to this peninsula at the south-west of the island, I propose to give the name of Serpentine Peninsula, and that of Reptile-end to the bent tail which terminates it, for it is just like a reptile's tail."

"Adopted," said the engineer.

"Now," said Herbert, pointing to the other extremity of the island, "let us call this gulf which is so singularly like a pair of open jaws, Shark Gulf."

"Capital!" cried Pencroft, "and we can complete the resemblance by naming the two parts of the jaws Mandible Cape."

"But there are two capes," observed the reporter.

"Well," replied Pencroft, "we can have North Mandible Cape and South Mandible Cape."

"They are inscribed," said Spilett.

"There is only the point at the south-eastern extremity of the island to be named," said Pencroft.

"That is, the extremity of Union Bay?" asked Herbert.

"Claw Cape," cried Neb directly, who also wished to be godfather to some part of his domain.

In truth, Neb had found an excellent name, for this cape was very like the powerful claw of the fantastic animal which this singularly-shaped island represented.

Pencroft was delighted at the turn things had taken, and their imaginations soon gave to the river which furnished the settlers with drinking water and near which the balloon had thrown them, the name of the Mercy, in true gratitude to Providence. To the islet upon which the castaways had first landed, the name of Safety Island; to the plateau which crowned the high granite precipice above the Chimneys, and from whence the gaze could embrace the whole of the vast bay, the name of Prospect Heights.

Lastly, all the masses of impenetrable wood which covered the Serpentine Peninsula were named the forests of the Far West.

The nomenclature of the visible and known parts of the island was thus finished, and later, they would complete it as they made fresh discoveries.

As to the points of the compass, the engineer had roughly fixed them by the height and position of the sun, which placed Union Bay and Prospect Heights to the east. But the next day, by taking the exact hour of the rising and setting of the sun, and by marking its position between

this rising and setting, he reckoned to fix the north of the island exactly, for, in consequence of its situation in the southern hemisphere, the sun, at the precise moment of its culmination, passed in the north and not in the south, as, in its apparent movement, it seems to do, to those places situated in the northern hemisphere.

Everything was finished, and the settlers had only to descend Mount Franklin to return to the Chimneys, when Pencroft cried out,—

“Well! we are precious stupid!”

“Why?” asked Gideon Spilett, who had closed his notebook and risen to depart.

“Why! our island! we have forgotten to christen it!”

Herbert was going to propose to give it the engineer's name, and all his companions would have applauded him, when Cyrus Harding said simply,—

“Let us give it the name of a great citizen, my friends; of him who now struggles to defend the unity of the American Republic! Let us call it Lincoln Island!”

The engineer's proposal was replied to by three hurrahs.

And that evening, before sleeping, the new colonists talked of their absent country; they spoke of the terrible war which stained it with blood; they could not doubt that the South would soon be subdued, and that the cause of the North, the cause of justice, would triumph, thanks to Grant, thanks to Lincoln!

Now this happened the 30th of March, 1865. They little knew that sixteen days afterwards a frightful crime would be committed in Washington, and that on Good Friday Abraham Lincoln would fall by the hand of a fanatic.

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CHAPTER XII.

REGULATING THE WATCHES—PENCROFT IS SATISFIED—
—A SUSPICIOUS SMOKE—COURSE OF RED CREEK—
THE FLORA OF LINCOLN ISLAND—THE FAUNA—
MOUNTAIN PHEASANTS—CHASING KANGAROOS—AN
AGOUTI—LAKE GRANT—RETURN TO THE CHIMNEYS.

THEY now began the descent of the mountain. Climbing down the crater, they went round the cone and reached their encampment of the previous night. Pencroft thought it must be breakfast-time, and the watches of the reporter and engineer were therefore consulted to find out the hour.

That of Gideon Spilett had been preserved from the seawater, as he had been thrown at once on the sand out of reach of the waves. It was an instrument of excellent quality, a perfect pocket chronometer, which the reporter had not forgotten to wind up carefully every day.

As to the engineer's watch, it, of course, had stopped during the time which he had passed on the downs.

The engineer now wound it up, and ascertaining by the height of the sun that it must be about nine o'clock in the morning, he put his watch at that hour.

Gideon Spilett was about to do the same, when the engineer, stopping his hand, said,—

"No, my dear Spilett, wait. You have kept the Richmond time, have you not?"

"Yes, Cyrus."

"Consequently, your watch is set by the meridian of that town, which is almost that of Washington?"

"Undoubtedly."

"Very well, keep it thus. Content yourself with winding it up very exactly, but do not touch the hands. This may be of use to us."

"What will be the good of that?" thought the sailor.

They ate, and so heartily, that the store of game and almonds was totally exhausted. But Pencroft was not at all uneasy, they would supply themselves on the way. Top, whose share had been very much to his taste, would know how to find some fresh game among the brushwood. Moreover, the sailor thought of simply asking the engineer to manufacture some powder and one or two fowling-pieces; he supposed there would be no difficulty in that.

On leaving the plateau, the captain proposed to his companions to return to the Chimneys by a new way. He wished to reconnoitre Lake Grant, so magnificently framed in trees. They therefore followed the crest of one of the spurs, between which the creek¹ that supplied the lake probably had its source. In talking, the settlers already employed the names which they had just chosen, which singularly facilitated the exchange of their ideas. Herbert and Pencroft—the one young and the other very boyish—were enchanted, and whilst walking, the sailor said,—

“Hey, Herbert! how capital it sounds! It will be impossible to lose ourselves, my boy, since, whether we follow the way to Lake Grant, or whether we join the Mercy through the woods of the Far West, we shall be certain to arrive at Prospect Heights, and, consequently, at Union Bay!”

It had been agreed, that without forming a compact band, the settlers should not stray away from each other. It was very certain that the thick forests of the island were inhabited by dangerous animals, and it was prudent to be on their guard. In general, Pencroft, Herbert, and Neb, walked first, preceded by Top, who poked his nose into every bush. The reporter and the engineer went together,

¹ An American name for a small watercourse.

Gideon Spilett ready to note every incident, the engineer silent for the most part, and only stepping aside to pick up sometimes one thing, sometimes another, a mineral or vegetable substance, which he put into his pocket without making any remark.

"What can he be picking up?" muttered Pencroft. "I have looked in vain for anything that's worth the trouble of stooping for."

Towards ten o'clock the little band descended the last declivities of Mount Franklin. As yet the ground was scantily strewn with bushes and trees. They were walking over yellowish calcinated earth, forming a plain of nearly a mile long, which extended to the edge of the wood. Great blocks of that basalt, which, according to Bischof, takes three hundred and fifty millions of years to cool, strewed the plain, very confused in some places. However, there were here no traces of lava, which was spread more particularly over the northern slopes.

Cyrus Harding expected to reach, without incident, the course of the creek, which he supposed flowed under the trees at the border of the plain, when he saw Herbert running hastily back, whilst Neb and the sailor were hiding behind the rocks.

"What's the matter, my boy?" asked Spilett.

"Smoke," replied Herbert. "We have seen smoke amongst the rocks, a hundred paces from us."

"Men in this place?" cried the reporter.

"We must avoid showing ourselves before knowing with whom we have to deal," replied Cyrus Harding. "I trust that there are no natives on this island; I dread them more than anything else. Where is Top?"

"Top is on before."

"And he doesn't bark?"

"No."

"That is strange. However, we must try to call him back."

In a few moments, the engineer, Gideon Spilett, and Herbert had rejoined their two companions, and like them, they kept out of sight behind the heaps of basalt.

From thence they clearly saw smoke of a yellowish colour rising in the air.

Top was recalled by a slight whistle from his master, and the latter, signing to his companions to wait for him, glided away among the rocks. The colonists, motionless, anxiously awaited the result of this exploration, when a shout from the engineer made them hasten forward. They soon joined him, and were at once struck with a disagreeable odour which impregnated the atmosphere.

The odour, easily recognized, was enough for the engineer to guess what the smoke was which at first, not without cause, had startled him.

"This fire," said he, "or rather, this smoke is produced

by nature alone. There is a sulphur spring there, which will effectually cure all our sore throats."

"Captain!" cried Pencroft. "What a pity that I haven't got a cold!"

The settlers then directed their steps towards the place from which the smoke escaped. They there saw a sulphur spring which flowed abundantly between the rocks, and its waters discharged a strong sulphuric acid odour, after having absorbed the oxygen of the air.

Cyrus Harding, dipping in his hand, felt the water oily to the touch. He tasted it and found it rather sweet. As to its temperature, that he estimated at ninety-five degrees Fahrenheit. Herbert having asked on what he based this calculation,—

"It's quite simple, my boy," said he, "for, in plunging my hand into the water, I felt no sensation either of heat or cold. Therefore it has the same temperature as the human body, which is about ninety-five degrees."

The sulphur spring not being of any actual use to the settlers, they proceeded towards the thick border of the forest, which began some hundred paces off.

There, as they had conjectured, the waters of the stream flowed clear and limpid between high banks of red earth, the colour of which betrayed the presence of oxide of iron. From this colour, the name of Red Creek was immediately given to the watercourse.

It was only a large stream, deep and clear, formed of the mountain water, which, half river, half torrent, here rippling peacefully over the sand, there chafing against the rocks or dashing down in a cascade, ran towards the lake, over a distance of a mile and a half, its breadth varying from thirty to forty feet. Its waters were sweet, and it was supposed that those of the lake were so also. A fortunate circumstance, in the event of their finding on its borders a more suitable dwelling than the Chimneys.

As to the trees, which some hundred feet downwards shaded the banks of the creek, they belonged, for the most part, to the species which abound in the temperate zone of America and Tasmania, and no longer to those coniferæ observed in that portion of the island already explored to some miles from Prospect Heights. At this time of the year, at the commencement of the month of April, which represents the month of October, in this hemisphere, that is, the beginning of autumn, they were still in full leaf. They consisted principally of casuarinas and eucalypti, some of which next year would yield a sweet manna, similar to the manna of the East. Clumps of Australian cedars rose on the sloping banks, which were also covered with the high grass called "tussac" in New Holland ; but the cocoa-nut, so abundant in the archipelagos of the Pacific, seemed to be wanting in the island, the latitude, doubtless, being too low.

"What a pity!" said Herbert, "such a useful tree, and which has such beautiful nuts!"

As to the birds, they swarmed among the scanty branches of the eucalypti and casuarinas, which did not hinder the display of their wings. Black, white, or grey cockatoos, paroquets, with plumage of all colours, kingfishers of a sparkling green and crowned with red, blue lories, and various other birds, appeared on all sides, as through a prism, fluttering about and producing a deafening clamour. Suddenly, a strange concert of discordant voices resounded in the midst of a thicket. The settlers heard successively the song of birds, the cry of quadrupeds, and a sort of clacking which they might have believed to have escaped from the lips of a native. Neb and Herbert rushed towards the bush, forgetting even the most elementary principles of prudence. Happily, they found there, neither a formidable wild beast nor a dangerous native, but merely half a dozen mocking and singing birds, known as mountain pheasants. A few skilful blows from a stick soon put an end to their concert, and procured excellent food for the evening's dinner.

Herbert also discovered some magnificent pigeons with bronzed wings, some superbly crested, others draped in green, like their congeners at Port-Macquarie; but it was impossible to reach them, or the crows and magpies which flew away in flocks.

A charge of small shot would have made great slaughter amongst these birds, but the hunters were still limited to sticks and stones, and these primitive weapons proved very insufficient.

Their insufficiency was still more clearly shown when a troop of quadrupeds, jumping, bounding, making leaps of thirty feet, regular flying mammiferæ, fled over the thickets, so quickly and at such a height, that one would have thought that they passed from one tree to another like squirrels.

"Kangaroos!" cried Herbert.

"Are they good to eat?" asked Pencroft.

"Stewed," replied the reporter, "their flesh is equal to the best venison!—"

Gideon Spilett had not finished this exciting sentence when the sailor, followed by Neb and Herbert, darted on the kangaroo's track. Cyrus Harding called them back in vain. But it was in vain too for the hunters to pursue such agile game, which went bounding away like balls. After a chase of five minutes, they lost their breath, and at the same time all sight of the creatures, which disappeared in the wood. Top was not more successful than his masters.

"Captain," said Pencroft, when the engineer and the reporter had rejoined them, "Captain, you see quite well we can't get on unless we make a few guns. Will that be possible?"

"Perhaps," replied the engineer, "but we will begin by first manufacturing some bows and arrows, and I don't doubt that you will become as clever in the use of them as the Australian hunters."

"Bows and arrows!" said Pencroft scornfully. "That's all very well for children!"

"Don't be proud, friend Pencroft," replied the reporter. "Bows and arrows were sufficient for centuries to stain the earth with blood. Powder is but a thing of yesterday, and war is as old as the human race—unhappily!"

"Faith, that's true, Mr. Spilett," replied the sailor, "and I always speak too quickly. You must excuse me!"

Meanwhile, Herbert, constant to his favourite science, Natural History, reverted to the kangaroos, saying,—

"Besides, we had to deal just now with the species which is most difficult to catch. They were giants with long grey fur; but if I am not mistaken, there exist black and red kangaroos, rock kangaroos, and rat kangaroos, which are more easy to get hold of. It is reckoned that there are about a dozen species—"

"Herbert," replied the sailor sententiously, "there is only one species of kangaroo to me, that is 'kangaroo on the spit,' and it's just the one we haven't got this evening!"

They could not help laughing at Master Pencroft's new classification. The honest sailor did not hide his regret at

being reduced for dinner to the singing pheasants, but fortune once more showed itself obliging to him.

In fact, Top, who felt that his interest was concerned, went and ferreted everywhere with an instinct doubled by a ferocious appetite. It was even probable that if some piece of game did fall into his clutches, none would be left for the hunters, if Top was hunting on his own account; but Neb watched him and he did well.

Towards three o'clock the dog disappeared in the brush-wood, and gruntings showed that he was engaged in a struggle with some animal. Neb rushed after him, and soon saw Top eagerly devouring a quadruped, which ten seconds later would have been past recognizing in Top's stomach. But fortunately the dog had fallen upon a brood, and besides the victim he was devouring, two other rodents—the animals in question belonged to that order—lay strangled on the turf.

Neb reappeared triumphantly holding one of the rodents in each hand. Their size exceeded that of a rabbit, their hair was yellow, mingled with greenish spots, and they had the merest rudiments of tails.

The citizens of the Union were at no loss for the right name of these rodents. They were maras, a sort of agouti, a little larger than their congeners of tropical countries, regular American rabbits, with long ears, jaws armed on each side with five molars, which distinguish the agouti.

"Hurrah!" cried Pencroft, "the roast has arrived! and now we can go home."

The walk, interrupted for an instant, was resumed. The limpid waters of the Red Creek flowed under an arch of casuarinas, banksias, and gigantic gum-trees. Superb lilacs rose to a height of twenty feet. Other arborescent species, unknown to the young naturalist, bent over the stream, which could be heard murmuring beneath the bowers of verdure.

Meanwhile the stream grew much wider, and Cyrus Harding supposed that they would soon reach its mouth. In fact, on emerging from beneath a thick clump of beautiful trees, it appeared all at once.

The explorers had arrived on the western shore of Lake Grant. The place was well worth looking at. This extent of water, of a circumference of nearly seven miles and an area of two hundred and fifty acres, reposed in a border of diversified trees. Towards the east, through a curtain of verdure, picturesquely raised in some places, sparkled an horizon of sea. The lake was curved at the north, which contrasted with the sharp outline of its lower part. Numerous aquatic birds frequented the shores of this little Ontario, in which the thousand isles of its American namesake were represented by a rock which emerged from its surface, some hundred feet from the southern shore. There lived in harmony several couples

of kingfishers perched on a stone, grave, motionless, watching for fish, then darting down, they plunged in with a sharp cry, and reappeared with their prey in their beaks. On the shores and on the islets, strutted wild ducks, pelicans, water-hens, red-beaks, philedons, furnished with a tongue like a brush, and one or two specimens of the splendid menura, the tail of which expands gracefully like a lyre.

As to the water of the lake, it was sweet, limpid, rather dark, and from certain bubbings, and the concentric circles which crossed each other on the surface, it could not be doubted that it abounded in fish.

"This lake is really beautiful!" said Gideon Spilett.
"We could live on its borders!"

"We will live there!" replied Harding.

The settlers, wishing to return to the Chimneys by the shortest way, descended towards the angle formed on the south by the junction of the lake's bank. It was not without difficulty that they broke a path through the thickets and brushwood which had never been put aside by the hand of man, and they thus went towards the shore, so as to arrive at the north of Prospect Heights. Two miles were cleared in this direction, and then, after they had passed the last curtain of trees, appeared the plateau, carpeted with thick turf, and beyond that the infinite sea.

To return to the Chimneys, it was enough to cross the

plateau obliquely for the space of a mile, and then to descend to the elbow formed by the first détour of the Mercy. But the engineer desired to know how and where the overplus of the water from the lake escaped, and the exploration was prolonged under the trees for a mile and a half towards the north. It was most probable that an overfall existed somewhere, and doubtless through a cleft in the granite. This lake was only, in short, an immense centre basin, which was filled by degrees by the creek, and its waters must necessarily pass to the sea by some fall. If it was so, the engineer thought that it might perhaps be possible to utilize this fall and borrow its power, actually lost without profit to any one. They continued then to follow the shores of Lake Grant by climbing the plateau; but, after having gone a mile in this direction, Cyrus Harding had not been able to discover the overfall, which, however, must exist somewhere.

It was then half-past four. In order to prepare for dinner it was necessary that the settlers should return to their dwelling. The little band retraced their steps, therefore, and by the left bank of the Mercy Cyrus Harding and his companions arrived at the Chimneys.

The fire was lighted, and Neb and Pencroft, on whom the functions of cooks naturally devolved, to the one in his quality of negro, to the other in that of sailor, quickly prepared some broiled agouti, to which they did great justice.

The repast at length terminated ; at the moment when each one was about to give himself up to sleep, Cyrus Harding drew from his pocket little specimens of different sorts of minerals, and just said,—

“ My friends, this is iron mineral, this a pyrite, this is clay, this is lime, and this is coal. Nature gives us these things. It is our business to make a right use of them. To-morrow we will commence operations.”

CHAPTER XIII.

WHAT IS FOUND UPON TOP—MANUFACTURING BOWS AND ARROWS—A BRICK-FIELD—A POTTERY—DIFFERENT COOKING UTENSILS—THE FIRST BOILED MEAT—WORMWOOD—THE SOUTHERN CROSS—AN IMPORTANT ASTRONOMICAL OBSERVATION.

"WELL, Captain, where are we going to begin?" asked Pen-croft next morning of the engineer.

"At the beginning," replied Cyrus Harding.

And in fact, the settlers were compelled to begin "at the very beginning." They did not possess even the tools necessary for making tools, and they were not even in the condition of nature, who, "having time, husbands her strength." They had no time, since they had to provide for the immediate wants of their existence, and though, profiting by acquired experience, they had nothing to invent, still they had everything to make: their iron and their steel were as yet only in the state of minerals,
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their earthenware in the state of clay, their linen and their clothes in the state of textile material.

It must be said, however, that the settlers were "men" in the complete and higher sense of the word. The engineer Harding could not have been seconded by more intelligent companions, nor with more devotion and zeal. He had tried them. He knew their abilities.

Gideon Spilett, a talented reporter, having learned everything so as to be able to speak of everything, would contribute largely with his head and hands to the colonization of the island. He would not draw back from any task : a determined sportsman, he would make a business of what till then had only been a pleasure to him.

Herbert, a gallant boy, already remarkably well informed in the natural sciences, would render great service to the common cause.

Neb was devotion personified. Clever, intelligent, indefatigable, robust, with iron health, he knew a little about the work of the forge, and could not fail to be very useful in the colony.

As to Pencroft, he had sailed over every sea, a carpenter in the dockyards at Brooklyn, assistant tailor in the vessels of the state, gardener, cultivator, during his holidays, &c., and like all seamen, fit for anything, he knew how to do everything.

It would have been difficult to unite five men, better

fitted to struggle against fate, more certain to triumph over it.

"At the beginning," Cyrus Harding had said. Now this beginning of which the engineer spoke was the construction of an apparatus which would serve to transform the natural substances. The part which heat plays in these transformations is known. Now fuel, wood or coal, was ready for immediate use, an oven must be built to use it.

"What is this oven for?" asked Pencroft.

"To make the pottery which we have need of," replied Harding.

"And of what shall we make the oven?"

"With bricks."

"And the bricks?"

"With clay. Let us start, my friends. To save trouble, we will establish our manufactory at the place of production. Neb will bring provisions, and there will be no lack of fire to cook the food."

"No," replied the reporter; "but if there is a lack of food, for want of instruments for the chase?"

"Ah, if we only had a knife!" cried the sailor.

"Well?" asked Cyrus Harding.

"Well! I would soon make a bow and arrows, and then there would be plenty of game in the larder!"

"Yes, a knife, a sharp blade—" said the engineer, as if he was speaking to himself.

At this moment his eyes fell upon Top, who was running about on the shore. Suddenly Harding's face became animated.

"Top, here?" said he.

The dog came at his master's call. The latter took Top's head between his hands, and unfastening the collar which the animal wore round his neck, he broke it in two, saying,—

"There are two knives, Pencroft!"

Two hurrahs from the sailor was the reply. Top's collar was made of a thin piece of tempered steel. They had only to sharpen it on a piece of sandstone, then to raise the edge on a finer stone. Now sandstone was abundant on the beach, and two hours after the stock of tools in the colony consisted of two sharp blades, which were easily fixed in solid handles.

The production of these their first tools was hailed as a triumph. It was indeed a valuable result of their labour, and a very opportune one. They set out. Cyrus Harding proposed that they should return to the western shore of the lake, where the day before he had noticed the clayey ground of which he possessed a specimen. They therefore followed the bank of the Mercy, traversed Prospect Heights, and after a walk of five miles or more they reached a glade, situated two hundred feet from Lake Grant.

On the way Herbert had discovered a tree, the branches of which the Indians of South America employ for making

their bows. It was the crejimba, of the palm family, which does not bear edible fruit. Long straight branches were cut, the leaves stripped off; it was shaped, stronger in the middle, more slender at the extremities, and nothing remained to be done but to find a plant fit to make the bow-string. This was the "*hibiscus heterophyllus*," which furnishes fibres of such remarkable tenacity that they have been compared to the tendons of animals. Pencroft thus obtained bows of tolerable strength, for which he only wanted arrows. These were easily made with straight stiff branches, without knots, but the points with which they must be armed, that is to say, a substance to serve in lieu of iron, could not be met with so easily. But Pencroft said, that having done his part of the work, chance would do the rest.

The settlers arrived on the ground which had been discovered the day before. Being composed of the sort of clay which is used for making bricks and tiles, it was very useful for the work in question. There was no great difficulty in it. It was enough to scour the clay with sand, then to mould the bricks and bake them by the heat of a wood fire.

Generally bricks are formed in moulds, but the engineer contented himself with making them by hand. All that day and the day following were employed in this work. The clay, soaked in water, was mixed by the feet and

hands of the manipulators, and then divided into pieces of equal size. A practised workman can make, without a machine, about ten thousand bricks in twelve hours ; but in their two days' work the five brickmakers on Lincoln Island had not made more than three thousand, which were ranged near each other, until the time when their complete desiccation would permit them to be used in building the oven, that is to say, in three or four days.

It was on the 2nd of April that Harding had employed himself in fixing the orientation of the island, or, in other words, the precise spot where the sun rose. The day before he had noted exactly the hour when the sun disappeared beneath the horizon, making allowance for the refraction. This morning he noted, no less exactly, the hour at which it reappeared. Between this setting and rising twelve hours twenty-four minutes passed. Then, six hours, twelve minutes after its rising, the sun on this day would exactly pass the meridian, and the point of the sky which it occupied at this moment would be the north.¹

At the said hour, Cyrus marked this point, and putting in a line with the sun two trees which would serve him for

¹ Indeed at this time of the year and in this latitude the sun rises at 33 minutes past 5 in the morning, and sets at 17 minutes past 6 in the evening.

marks, he thus obtained an invariable meridian for his ulterior operations.

The settlers employed the two days before the oven was built in collecting fuel. Branches were cut all round the glade, and they picked up all the fallen wood under the trees. They were also able to hunt with greater success, since Pencroft now possessed some dozen arrows armed with sharp points. It was Top who had furnished these points, by bringing in a porcupine, rather inferior eating, but of great value, thanks to the quills with which it bristled. These quills were fixed firmly at the ends of the arrows, the flight of which was made more certain by some cockatoos' feathers. The reporter and Herbert soon became very skilful archers. Game of all sorts in consequence abounded at the Chimneys, capybaras, pigeons, agoutis, grouse, &c. The greater part of these animals were killed in the part of the forest on the left bank of the Mercy, to which they gave the name of Jacamar Wood, in remembrance of the bird which Pencroft and Herbert had pursued when on their first exploration.

This game was eaten fresh, but they preserved some capybara hams, by smoking them above a fire of green wood, after having perfumed them with sweet-smelling leaves. However, this food, although very strengthening, was always roast upon roast, and the party would have been

delighted to hear some soup bubbling on the hearth, but they must wait till a pot could be made, and, consequently, till the oven was built.

During these excursions, which were not extended far from the brick-field, the hunters could discern the recent passage of animals of a large size, armed with powerful claws, but they could not recognize the species. Cyrus Harding advised them to be very careful, as the forest probably enclosed many dangerous beasts.

And he did right. Indeed, Gideon Spilett and Herbert one day saw an animal which resembled a jaguar. Happily the creature did not attack them, or they might not have escaped without a severe wound. As soon as he could get a regular weapon, that is to say, one of the guns which Pencroft begged for, Gideon Spilett resolved to make desperate war against the ferocious beasts, and exterminate them from the island.

The Chimneys during these few days was not made more comfortable, for the engineer hoped to discover, or build if necessary, a more convenient dwelling. They contented themselves with spreading moss and dry leaves on the sand of the passages, and on these primitive couches the tired workers slept soundly.

They also reckoned the days they had passed on Lincoln Island, and from that time kept a regular account. The 5th of April, which was Wednesday, was twelve days

from the time when the wind threw the castaways on this shore.

On the 6th of April, at daybreak, the engineer and his companions were collected in the glade, at the place where they were going to perform the operation of baking the bricks. Naturally this had to be in the open air, and not in a kiln, or rather, the agglomeration of bricks made an enormous kiln, which would bake itself. The fuel, made of well-prepared fagots, was laid on the ground and surrounded with several rows of dried bricks, which soon formed an enormous cube, to the exterior of which they contrived air-holes. The work lasted all day, and it was not till the evening that they set fire to the fagots. No one slept that night, all watching carefully to keep up the fire.

The operation lasted forty-eight hours, and succeeded perfectly. It then became necessary to leave the smoking mass to cool, and during this time Neb and Pencroft, guided by Cyrus Harding, brought, on a hurdle made of interlaced branches, loads of carbonate of lime and common stones, which were very abundant, to the north of the lake. These stones, when decomposed by heat, made a very strong quicklime, greatly increased by slacking, at least as pure as if it had been produced by the calcination of chalk or marble. Mixed with sand the lime made excellent mortar.

The result of these different works was, that, on the 9th of April, the engineer had at his disposal a quantity of prepared lime and some thousands of bricks.

Without losing an instant, therefore, they began the construction of a kiln to bake the pottery, which was indispensable for their domestic use. They succeeded without much difficulty. Five days after, the kiln was supplied with coal, which the engineer had discovered lying open to the sky towards the mouth of the Red Creek, and the first smoke escaped from a chimney twenty feet high. The glade was transformed into a manufactory, and Pencroft was not far wrong in believing that from this kiln would issue all the products of modern industry.

In the meantime what the settlers first manufactured was a common pottery in which to cook their food. The chief material was clay, to which Harding added a little lime and quartz. This paste made regular "pipe-clay," with which they manufactured bowls, cups moulded on stones of a proper size, great jars and pots to hold water, &c. The shape of these objects was clumsy and defective, but after they had been baked in a high temperature, the kitchen of the Chimneys was provided with a number of utensils, as precious to the settlers as the most beautifully enamelled china. We must mention here that Pencroft, desirous to know if the clay thus prepared was worthy of its name of pipe-clay, made some large pipes, which he thought charm-

ing but for which, alas! he had no tobacco, and that was a great privation to Pencroft. "But tobacco will come, like everything else!" he repeated, in a burst of absolute confidence.

This work lasted till the 15th of April, and the time was well employed. The settlers, having become potters, made nothing but pottery. When it suited Cyrus Harding to change them into smiths, they would become smiths. But the next day being Sunday, and also Easter Sunday, all agreed to sanctify the day by rest. These Americans were religious men, scrupulous observers of the precepts of the Bible, and their situation could not but develope sentiments of confidence towards the Author of all things.

On the evening of the 15th of April they returned to the Chimneys, carrying with them the pottery, the furnace being extinguished until they could put it to a new use. Their return was marked by a fortunate incident; the engineer discovered a substance which replaced tinder. It is known that a spongy, velvety flesh is procured from a certain mushroom of the genus polyporous. Properly prepared, it is extremely inflammable, especially when it has been previously saturated with gunpowder, or boiled in a solution of nitrate or chlorate of potash. But, till then, they had not found any of these polypores or even any of the morels which could replace them. On this day, the engineer, seeing a plant belonging to the wormwood genus, the

principal species of which are absinthe, balm-mint, tarragon, &c., gathered several tufts, and, presenting them to the sailor, said,—

“Here, Pencroft, this will please you.”

Pencroft looked attentively at the plant, covered with long silky hair, the leaves being clothed with soft down

“What’s that, captain?” asked Pencroft. “Is it tobacco?”

“No,” replied Harding, “it is wormwood ; Chinese wormwood to the learned, but to us it will be tinder.”

When the wormwood was properly dried it provided them with a very inflammable substance, especially afterwards when the engineer had impregnated it with nitrate of potash, of which the island possessed several beds, and which is in truth saltpetre.

The colonists had a good supper that evening. Neb prepared some agouti soup, a smoked capybara ham, to which was added the boiled tubercles of the “*caladium macro-rhizum*,” an herbaceous plant of the arum family. They had an excellent taste, and were very nutritious, being something similar to the substance which is sold in England under the name of “Portland sago ;” they were also a good substitute for bread, which the settlers in Lincoln Island did not yet possess.

When supper was finished, before sleeping, Harding and his companions went to take the air on the beach. It was

eight o'clock in the evening ; the night was magnificent. The moon, which had been full five days before, had not yet risen, but the horizon was already silvered by those soft, pale shades which might be called the dawn of the moon. At the southern zenith glittered the circumpolar constellations, and above all the Southern Cross, which some days before the engineer had greeted on the summit of Mount Franklin.

Cyrus Harding gazed for some time at this splendid constellation, which has at its summit and at its base two stars of the first magnitude, at its left arm a star of the second, and at its right arm a star of the third magnitude.

Then, after some minutes' thought—

"Herbert," he asked of the lad, "is not this the 15th of April?"

"Yes, captain," replied Herbert.

"Well, if I am not mistaken, to-morrow will be one of the four days in the year in which the real time is identical with average time ; that is to say, my boy, that to-morrow, to within some seconds, the sun will pass the meridian just at mid-day by the clocks. If the weather is fine I think that I shall obtain the longitude of the island with an approximation of some degrees."

"Without instruments, without sextant?" asked Gideon Spilett.

"Yes," replied the engineer. "Also, since the night is clear, I will try, this very evening, to obtain our latitude by calculating the height of the Southern Cross, that is, from the southern pole above the horizon. You understand, my friends, that before undertaking the work of installation in earnest it is not enough to have found out that this land is an island; we must, as nearly as possible, know at what distance it is situated, either from the American continent or Australia, or from the principal archipelagos of the Pacific."

"In fact," said the reporter, "instead of building a house it would be more important to build a boat, if by chance we are not more than a hundred miles from an inhabited coast."

"That is why," returned Harding, "I am going to try this evening to calculate the latitude of Lincoln Island, and to-morrow, at mid-day, I will try to calculate the longitude."

If the engineer had possessed a sextant, an apparatus with which the angular distance of objects can be measured with great precision, there would have been no difficulty in the operation. This evening by the height of the pole, the next day by the passing of the sun at the meridian, he would obtain the position of the island. But as they had not one he would have to supply the deficiency.

Harding then entered the Chimneys. By the light of the fire he cut two little flat rulers, which he joined together at one end so as to form a pair of compasses, whose legs could separate or come together. The fastening was fixed with a strong acacia thorn which was found in the wood pile. This instrument finished, the engineer returned to the beach, but as it was necessary to take the height of the pole from above a clear horizon, that is, a sea horizon, and as Claw Cape hid the southern horizon, he was obliged to look for a more suitable station. The best would evidently have been the shore exposed directly to the south ; but the Mercy would have to be crossed, and that was a difficulty. Harding resolved, in consequence, to make his observation from Prospect Heights, taking into consideration its height above the level of the sea—a height which he intended to calculate next day by a simple process of elementary geometry.

The settlers, therefore, went to the plateau, ascending the left bank of the Mercy, and placed themselves on the edge which looked north-west and south-east, that is, above the curiously-shaped rocks which bordered the river.

This part of the plateau commanded the heights of the left bank, which sloped away to the extremity of Claw Cape, and to the southern side of the island. No obstacle intercepted their gaze, which swept the horizon in a semi-circle from the cape to Reptile End. To the south the

horizon, lighted by the first rays of the moon, was very clearly defined against the sky.

At this moment the Southern Cross presented itself to the observer in an inverted position, the star Alpha marking its base, which is nearer to the southern pole.

This constellation is not situated as near to the antarctic pole as the Polar Star is to the arctic pole. The star Alpha is about twenty-seven degrees from it, but Cyrus Harding knew this and made allowance for it in his calculation. He took care also to observe the moment when it passed the meridian below the pole, which would simplify the operation.

Cyrus Harding pointed one leg of the compasses to the sea horizon, the other to Alpha, and the space between the two legs gave him the angular distance which separated Alpha from the horizon. In order to fix the angle obtained, he fastened with thorns the two pieces of wood on a third placed transversely, so that their separation should be properly maintained.

That done, there was only the angle to calculate by bringing back the observation to the level of the sea, taking into consideration the depression of the horizon, which would necessitate measuring the height of the cliff. The value of this angle would give the height of Alpha, and consequently that of the pole above the horizon, that is to say, the latitude of the island, since the latitude of a

point of the globe is always equal to the height of the pole above the horizon of this point.

The calculations were left for the next day, and at ten o'clock every one was sleeping soundly.

CHAPTER XIV.

MEASURING THE CLIFF—AN APPLICATION OF THE THEOREM OF SIMILAR TRIANGLES—LATITUDE OF THE ISLAND—EXCURSION TO THE NORTH—AN OYSTER-BED—PLANS FOR THE FUTURE—THE SUN PASSING THE MERIDIAN — THE LONGITUDE OF LINCOLN ISLAND.

THE next day, the 16th of April, and Easter Sunday, the settlers issued from the Chimneys at daybreak, and proceeded to wash their linen. The engineer intended to manufacture soap as soon as he could procure the necessary materials—soda or potash, fat or oil. The important question of renewing their wardrobe would be treated of in the proper time and place. At any rate their clothes would last at least six months longer, for they were strong, and could resist the wear of manual labour. But all would depend on the situation of the island with regard to in-

habited land. This would be settled to-day if the weather permitted.

The sun rising above a clear horizon, announced a magnificent day, one of those beautiful autumn days which are like the last farewells of the warm season.

It was now necessary to complete the observations of the evening before by measuring the height of the cliff above the level of the sea.

"Shall you not need an instrument similar to the one which you used yesterday?" said Herbert to the engineer.

"No, my boy," replied the latter, "we are going to proceed differently, but in as precise a way."

Herbert, wishing to learn everything he could, followed the engineer to the beach. Pencroft, Neb, and the reporter remained behind and occupied themselves in different ways.

Cyrus Harding had provided himself with a straight stick, twelve feet long, which he had measured as exactly as possible by comparing it with his own height, which he knew to a hair. Herbert carried a plumb-line which Harding had given him, that is to say, a simple stone fastened to the end of a flexible fibre. Having reached a spot about twenty feet from the edge of the beach, and nearly five hundred feet from the cliff, which rose perpendicularly, Harding thrust the pole two feet into the sand, and wedging it up carefully, he managed by means

of the plumb-line to erect it perpendicularly with the plane of the horizon.

That done, he retired the necessary distance, when, lying on the sand, his eye glanced at the same time at the top of the pole and the crest of the cliff. He carefully marked the place with a little stick.

Then addressing Herbert—

“Do you know the first principles of geometry?” he asked.

“Slightly, captain,” replied Herbert, who did not wish to put himself forward.

“You remember what are the properties of two similar triangles?”

“Yes,” replied Herbert; “their homologous sides are proportional.”

“Well, my boy, I have just constructed two similar right-angled triangles; the first, the smallest, has for its sides the perpendicular pole, the distance which separates the little stick from the foot of the pole, and my visual ray for hypotenuse; the second has for its sides the perpendicular cliff, the height of which we wish to measure, the distance which separates the little stick from the bottom of the cliff, and my visual ray also forms its hypotenuse, which proves to be the prolongation of that of the first triangle.”

“Ah, captain, I understand!” cried Herbert.

"As the distance from the stick to the pole is to the distance from the stick to the base of the cliff, so is the height of the pole to the height of the cliff."

"Just so, Herbert," replied the engineer; "and when we have measured the two first distances, knowing the height of the pole, we shall only have a sum in proportion to do, which will give us the height of the cliff, and will save us the trouble of measuring it directly."

The two horizontal distances were found out by means of the pole, whose length above the sand was exactly ten feet.

The first distance was fifteen feet between the stick and the place where the pole was thrust into the sand.

The second distance between the stick and the bottom of the cliff was five hundred feet.

These measurements finished, Cyrus Harding and the lad returned to the Chimneys.

The engineer then took a flat stone which he had brought back from one of his previous excursions, a sort of slate, on which it was easy to trace figures with a sharp shell. He then proved the following proportions:—

$$\begin{array}{r}
 15 : 500 :: 10 : x \\
 500 \times 10 = 5000 \\
 5000 \\
 \hline
 15 = 333 : 3
 \end{array}$$

From which it was proved that the granite cliff measured 333 feet in height.

Cyrus Harding then took the instrument which he had made the evening before, the space between its two legs giving the angular distance between the star Alpha and the horizon. He measured, very exactly, the opening of this angle on a circumference which he divided into 360 equal parts. Now, this angle, by adding to it the twenty-seven degrees which separated Alpha from the antarctic pole, and by reducing to the level of the sea the height of the cliff on which the observation had been made, was found to be fifty-three degrees. These fifty-three degrees being subtracted from ninety degrees—the distance from the pole to the equator—there remained thirty-seven degrees. Cyrus Harding concluded, therefore, that Lincoln Island was situated on the thirty-seventh degree of the southern latitude, or taking into consideration through the imperfection of the performance, an error of five degrees, that it must be situated between the thirty-fifth and the fortieth parallel.

There was only the longitude to be obtained, and the position of the island would be determined. The engineer hoped to attempt this the same day, at twelve o'clock, at which moment the sun would pass the meridian.

It was decided that Sunday should be spent in a walk, or rather an exploring expedition, to that side of the island

between the north of the lake and Shark Gulf, and if there was time they would push their discoveries to the northern side of Cape South Mandible. They would breakfast on the downs, and not return till evening.

At half-past eight the little band was following the edge of the channel. On the other side, on Safety Islet, numerous birds were gravely strutting. They were divers, easily recognized by their cry, which much resembles the braying of a donkey. Pencroft only considered them in an eatable point of view, and learnt with some satisfaction that their flesh, though blackish, is not bad food.

Great amphibious creatures could also be seen crawling on the sand ; seals, doubtless, who appeared to have chosen the islet for a place of refuge. It was impossible to think of those animals in an alimentary point of view, for their oily flesh is detestable ; however, Cyrus Harding observed them attentively, and without making known his idea, he announced to his companions that very soon they would pay a visit to the islet. The beach was strewn with innumerable shells, some of which would have rejoiced the heart of a conchologist ; there were, among others, the phasianella, the terebratula, &c. But what would be of more use, was the discovery, by Neb, at low tide, of a large oyster-bed, among the rocks, nearly five miles from the Chimneys.

"Neb will not have lost his day," cried Pencroft, looking at the spacious oyster-bed.

"It is really a fortunate discovery," said the reporter, "and as it is said that each oyster produces yearly from fifty to sixty thousand eggs, we shall have an inexhaustible supply there."

"Only I believe that the oyster is not very nourishing," said Herbert.

"No," replied Harding. "The oyster contains very little nitrogen, and if a man lived exclusively on them, he would have to eat not less than fifteen to sixteen dozen a day."

"Capital!" replied Pencroft. "We might swallow dozens and dozens without exhausting the bed. Shall we take some for breakfast?"

And without waiting for a reply to his proposal, knowing that it would be approved of, the sailor and Neb detached a quantity of the molluscs. They put them in a sort of net of hibiscus fibre, which Neb had manufactured, and which already contained food; they then continued to climb the coast between the downs and the sea.

From time to time Harding consulted his watch, so as to be prepared in time for the solar observation, which had to be made exactly at mid-day.

All that part of the island was very barren as far as the point which closed Union Bay, and which had received

the name of Cape South Mandible. Nothing could be seen there but sand and shells, mingled with *débris* of lava. A few sea-birds frequented this desolate coast, gulls, great albatrosses, as well as wild duck, for which Pencroft had a great fancy. He tried to knock some over with an arrow, but without result, for they seldom perched, and he could not hit them on the wing.

This led the sailor to repeat to the engineer,—

“You see, captain, so long as we have not one or two fowling-pieces, we shall never get anything!”

“Doubtless, Pencroft,” replied the reporter, “but it depends on you. Procure us some iron for the barrels, steel for the hammers, saltpetre, coal, and sulphur for powder, mercury and nitric acid for the fulminate, and lead for the shot, and the captain will make us first-rate guns.”

“Oh!” replied the engineer, “we might, no doubt, find all these substances on the island, but a gun is a delicate instrument, and needs very particular tools. However, we shall see later!”

“Why,” cried Pencroft, “were we obliged to throw overboard all the weapons we had with us in the car, all our implements, even our pocket-knives?”

‘But if we had not thrown them away, Pencroft, the balloon would have thrown us to the bottom of the sea!’ said Herbert.

"What you say is true, my boy," replied the sailor.

Then passing to another idea,—

"Think," said he, "how astounded Jonathan Forster and his companions must have been when, next morning, they found the place empty, and the machine flown away!"

"I am utterly indifferent about knowing what they may have thought," said the reporter.

"It was all my idea, that!" said Pencroft, with a satisfied air.

"A splendid idea, Pencroft!" replied Gideon Spilett, laughing, "and which has placed us where we are."

"I would rather be here than in the hands of the Southerners," cried the sailor, "especially since the captain has been kind enough to come and join us again."

"So would I, truly!" replied the reporter. "Besides, what do we want? Nothing."

"If that is not—everything!" replied Pencroft, laughing and shrugging his shoulders. "But, some day or other, we shall find means of going away!"

"Sooner, perhaps, than you imagine, my friends," remarked the engineer, "if Lincoln Island is but a medium distance from an inhabited island, or from a continent. We shall know in an hour. I have not a map of the Pacific, but my memory has preserved a very clear recollection of its southern part. The latitude which I obtained yesterday placed New Zealand to the west of Lincoln

Island, and the coast of Chili to the east. But between these two countries, there is a distance of at least six thousand miles. It has, therefore, to be determined what point in this great space the island occupies, and this the longitude will give us presently, with a sufficient approximation, I hope."

"Is not the archipelago of the Pomoutous, the nearest point to us in latitude?" asked Herbert.

"Yes," replied the engineer, "but the distance which separates us from it is more than twelve hundred miles."

"And that way?" asked Neb, who followed the conversation with extreme interest, pointing to the south.

"That way, nothing," replied Pencroft.

"Nothing, indeed," added the engineer.

"Well, Cyrus," asked the reporter, "if Lincoln Island is not more than two or three thousand miles from New Zealand or Chili?"

"Well," replied the engineer, "instead of building a house we will build a boat, and Master Pencroft shall be put in command—"

"Well then," cried the sailor, "I am quite ready to be captain—as soon as you can make a craft that's able to keep at sea!"

"We shall do it, if it is necessary," replied Cyrus Harding.

But whilst these men, who really hesitated at nothing,

were talking, the hour approached at which the observation was to be made. What Cyrus Harding was to do to ascertain the passage of the sun at the meridian of the island, without an instrument of any sort, Herbert could not guess.

The observers were then about six miles from the Chimneys, not far from that part of the downs in which the engineer had been found after his enigmatical preservation. They halted at this place and prepared for breakfast, for it was half-past eleven. Herbert went for some fresh water from a stream which ran near, and brought it back in a jug which Neb had provided.

During these preparations Harding arranged everything for his astronomical observation. He chose a clear place on the shore, which the ebbing tide had left perfectly level. This bed of fine sand was as smooth as ice, not a grain out of place. It was of little importance whether it was horizontal or not, and it did not matter much whether the stick, six feet high, which was planted there, rose perpendicularly. On the contrary, the engineer inclined it towards the south, that is to say, in the direction of the coast opposite to the sun, for it must not be forgotten that the settlers in Lincoln Island, as the island was situated in the southern hemisphere, saw the radiant planet describe its diurnal arc above the northern, and not above the southern horizon.

Herbert now understood how the engineer was going to

proceed to ascertain the culmination of the sun, that is to say its passing the meridian of the island or, in other terms, the south of the place. It was by means of the shadow cast on the sand by the stick, a way which, for want of an instrument, would give him a suitable approach to the result which he wished to obtain.

In fact, the moment when this shadow would reach its minimum of length would be exactly twelve o'clock, and it would be enough to watch the extremity of the shadow, so as to ascertain the instant when, after having successively diminished, it began to lengthen. By inclining his stick to the side opposite to the sun, Cyrus Harding made the shadow longer, and consequently its modifications would be more easily ascertained. In fact, the longer the needle of a dial is, the more easily can the movement of its point be followed. The shadow of the stick was nothing but the needle of a dial.

When he thought the moment had come, Cyrus Harding knelt on the sand, and with little wooden pegs, which he stuck into the sand, he began to mark the successive diminutions of the stick's shadow. His companions, bending over him, watched the operation with extreme interest. The reporter held his chronometer in his hand, ready to tell the hour which it marked when the shadow would be at its shortest. Moreover, as Cyrus Harding was working on the 16th of April, the day on which the true and the

average time are identical, the hour given by Gideon Spilett would be the true hour then at Washington, which would simplify the calculation. Meanwhile as the sun slowly ~~advanced~~, the shadow slowly diminished, and when it appeared to Cyrus Harding that it was beginning to increase, he asked, "What o'clock is it?"

"One minute past five," replied Gideon Spilett directly.

They had now only to calculate the operation. Nothing could be easier. It could be seen that there existed, in round numbers, a difference of five hours between the meridian of Washington and that of Lincoln Island, that is to say, it was mid-day in Lincoln Island when it was already five o'clock in the evening in Washington. Now the sun, in its apparent movement round the earth, traverses one degree in four minutes, or fifteen degrees an hour. Fifteen degrees multiplied by five hours give seventy-five degrees.

Then, since Washington is $77^{\circ} 3' 11''$, as much as to say seventy-seven degrees counted from the meridian of Greenwich—which the Americans take for their starting-point for longitudes concurrently with the English—it followed that the island must be situated seventy-seven and seventy-five degrees west of the meridian of Greenwich, that is to say, on the hundred and fifty-second degree of west longitude.

Cyrus Harding announced this result to his companions,

and taking into consideration errors of observation, as he had done for the latitude, he believed he could positively affirm that the position of Lincoln Island was between the thirty-fifth and the thirty-seventh parallel, and between the hundred and fiftieth and the hundred and fifty-fifth meridian to the west of the meridian of Greenwich.

The possible fault which he attributed to errors in the observation was, it may be seen, of five degrees on both sides, which, at sixty miles to a degree, would give an error of three hundred miles in latitude and longitude for the exact position.

But this error would not influence the determination which it was necessary to take. It was very evident that Lincoln Island was at such a distance from every country or island that it would be too hazardous to attempt to reach one in a frail boat.

In fact this calculation placed it at least twelve hundred miles from Tahiti and the islands of the archipelago of the Pomoutous, more than eighteen hundred miles from New Zealand, and more than four thousand five hundred miles from the American coast!

And when Cyrus Harding consulted his memory, he could not remember in any way that such an island occupied, in that part of the Pacific, the situation assigned to Lincoln Island.

CHAPTER XV.

IT IS DECIDED TO WINTER ON THE ISLAND—A METALLIC QUESTION—EXPLORING SAFETY ISLAND—A SEAL HUNT—CAPTURE OF AN ECHIDUA—A KOALA—WHAT IS CALLED THE CATALAN METHOD—MANUFACTURING IRON—HOW STEEL IS OBTAINED.

THE next day, the 17th of April, the sailor's first words were addressed to Gideon Spilett.

"Well, sir," he asked, "what shall we do to-day?"

"What the captain pleases," replied the reporter.

Till then the engineer's companions had been brickmakers and potters, now they were to become metallurgists.

The day before, after breakfast, they had explored as far as the point of Mandible Cape, seven miles distant from the Chimneys. There, the long series of downs ended, and the soil had a volcanic appearance. There were no longer high cliffs as at Prospect Heights, but a strange and capricious border which surrounded the narrow gulf between

the two capes, formed of mineral matter, thrown up by the volcano. Arrived at this point the settlers retraced their steps, and at nightfall entered the Chimneys; but they did not sleep before the question of knowing whether they could think of leaving Lincoln Island or not was definitely settled.

The twelve hundred miles which separated the island from the Pomoutou Islands was a considerable distance. A boat could not cross it, especially at the approach of the bad season. Pencroft had expressly declared this. Now, to construct a simple boat, even with the necessary tools, was a difficult work, and the colonists not having tools they must begin by making hammers, axes, adzes, saws, augers, planes, &c., which would take some time. It was decided, therefore, that they would winter at Lincoln Island, and that they would seek for a more comfortable dwelling than the Chimneys, in which to pass the winter months.

Before anything else could be done it was necessary to make the iron ore, of which the engineers had observed some traces in the north-west part of the island, fit for use by converting it either into iron or into steel.

Metals are not generally found in the ground in a pure state. For the most part they are combined with oxygen or sulphur. Such was the case with the two specimens which Cyrus Harding had brought back, one of magnetic iron, not carbonated, the other a pyrite, also called sulphuret of iron. It was, therefore, the first, the oxyde of iron,

O

which they must reduce with coal, that is to say, get rid of the oxygen, to obtain it in a pure state. This reduction is made by subjecting the ore with coal to a high temperature, either by the rapid and easy Catalan method, which has the advantage of transforming the ore into iron in a single operation, or by the blast furnace, which first smelts the ore, then changes it into iron, by carrying away the three to four per cent. of coal, which is combined with it.

Now Cyrus Harding wanted iron, and he wished to obtain it as soon as possible. The ore which he had picked up was in itself very pure and rich. It was the oxydulous iron, which is found in confused masses of a deep grey colour; it gives a black dust, crystallized in the form of the regular octahedron. Native loadstones consist of this ore, and iron of the first quality is made in Europe from that with which Sweden and Norway are so abundantly supplied. Not far from this vein was the vein of coal already made use of by the settlers. The ingredients for the manufacture being close together would greatly facilitate the treatment of the ore. This is the cause of the wealth of the mines in Great Britain, where the coal aids the manufacture of the metal extracted from the same soil at the same time as itself.

"Then, captain," said Pencroft, "we are going to work iron ore?"

"Yes, my friend," replied the engineer, "and for that—

something which will please you—we must begin by having a seal hunt on the islet."

"A seal hunt!" cried the sailor, turning towards Gideon Spilett. "Are seals needed to make iron?"

"Since Cyrus has said so!" replied the reporter.

But the engineer had already left the Chimneys, and Pencroft prepared for the seal hunt, without having received any other explanation.

Cyrus Harding, Herbert, Gideon Spilett, Neb, and the sailor were soon collected on the shore, at a place where the channel left a ford passable at low tide. The hunters could therefore traverse it without getting wet higher than the knee.

Harding then put his foot on the islet for the first, and his companions for the second time.

On their landing some hundreds of penguins looked fearlessly at them. The hunters, armed with sticks, could have killed them easily, but they were not guilty of such useless massacre, as it was important not to frighten the seals, who were lying on the sand several cable lengths off. They also respected certain innocent-looking birds, whose wings were reduced to the state of stumps, spread out like fins, ornamented with feathers of a scaly appearance. The settlers, therefore, prudently advanced towards the north point, walking over ground riddled with little holes, which formed nests for the sea-birds. Towards the extremity of

the islet appeared great black heads floating just above the water, having exactly the appearance of rocks in motion.

These were the seals which were to be captured. It was necessary, however, first to allow them to land, for with their close, short hair, and their fusiform conformation, being excellent swimmers, it is difficult to catch them in the sea, whilst on land their short, webbed feet prevent their having more than a slow, waddling movement.

Pencroft knew the habits of these creatures, and he advised waiting till they were stretched on the sand, when the sun, before long, would send them to sleep. They must then manage to cut off their retreat and knock them on the head.

The hunters, having concealed themselves behind the rocks, waited silently.

An hour passed before the seals came to play on the sand. They could count half a dozen. Pencroft and Herbert then went round the point of the islet, so as to take them in the rear, and cut off their retreat. During this time Cyrus Harding, Spilett, and Neb, crawling behind the rocks, glided towards the future scene of combat.

All at once the tall figure of the sailor appeared. Pencroft shouted. The engineer and his two companions threw themselves between the sea and the seals. Two of

the animals soon lay dead on the sand, but the rest regained the sea in safety.

"Here are the seals required, captain!" said the sailor, advancing towards the engineer.

"Capital," replied Harding. "We will make bellows of them!"

"Bellows!" cried Pencroft. "Well! these are lucky seals!"

It was, in fact, a blowing-machine, necessary for the treatment of the ore that the engineer wished to manufacture with the skins of the amphibious creatures. They were of a medium size, for their length did not exceed six feet. They resembled a dog about the head.

As it was useless to burden themselves with the weight of both the animals, Neb and Pencroft resolved to skin them on the spot, whilst Cyrus Harding and the reporter continued to explore the islet.

The sailor and the negro cleverly performed the operation, and three hours afterwards Cyrus Harding had at his disposal two seals' skins, which he intended to use in this state, without subjecting them to any tanning process.

The settlers waited till the tide was again low, and crossing the channel they entered the Chimneys.

The skins had then to be stretched on a frame of wood, and sewn by means of fibres so as to preserve the air with-

out allowing too much to escape. Cyrus Harding had nothing but the two steel blades from Top's collar, and yet he was so clever, and his companions aided him with so much intelligence, that three days afterwards the little colony's stock of tools was augmented by a blowing-machine, destined to inject the air into the midst of the ore when it should be subjected to heat,—an indispensable condition to the success of the operation.

On the morning of the 20th of April began the "metallic period," as the reporter called it in his notes. The engineer had decided, as has been said, to operate near the veins both of coal and ore. Now, according to his observations, these veins were situated at the foot of the north-east spurs of Mount Franklin, that is to say, a distance of six miles from their home. It was impossible, therefore, to return every day to the Chimneys, and it was agreed that the little colony should camp under a hut of branches, so that the important operation could be followed night and day.

This settled, they set out in the morning. Neb and Pencroft dragged the bellows on a hurdle ; also a quantity of vegetables and animals, which they besides could renew on the way.

The road led through Jacamar Wood, which they traversed obliquely from south-east to north-west, and in the thickest part. It was necessary to beat a path, which would in the future form the most direct road to Prospect

Heights and Mount Franklin. The trees, belonging to the species already discovered, were magnificent. Herbert found some new ones, amongst others some which Pencroft called "sham leeks;" for, in spite of their size, they were of the same liliaceous family as the onion, chive, shalot, or asparagus. These trees produce ligneous roots which, when cooked, are excellent; from them, by fermentation, a very agreeable liquor is made. They therefore made a good store of the roots.

The journey through the wood was long; it lasted the whole day, and so allowed plenty of time for examining the flora and fauna. Top, who took special charge of the fauna, ran through the grass and brushwood, putting up all sorts of game. Herbert and Gideon Spilett killed two kangaroos with bows and arrows, and also an animal which strongly resembled both a hedgehog and an ant-eater. It was like the first because it rolled itself into a ball, and bristled with spines, and the second because it had sharp claws, a long slender snout which terminated in a bird's beak, and an extendible tongue, covered with little thorns which served to hold the insects.

"And when it is in the pot," asked Pencroft naturally, "what will it be like?"

"An excellent piece of beef," replied Herbert.

"We will not ask more from it," replied the sailor.

During this excursion they saw several wild boars, which

however, did not offer to attack the little band, and it appeared as if they would not meet with any dangerous beasts; when, in a thick part of the wood, the reporter thought he saw, some paces from him, among the lower branches of a tree, an animal which he took for a bear, and which he very tranquilly began to draw. Happily for Gideon Spilett, the animal in question did not belong to the redoubtable family of the plantigrades. It was only a koala, better known under the name of the sloth, being about the size of a large dog, and having stiff hair of a dirty colour, the paws armed with strong claws, which enabled it to climb trees and feed on the leaves. Having identified the animal, which they did not disturb, Gideon Spilett erased "bear" from the title of his sketch, putting koala in its place, and the journey was resumed.

At five o'clock in the evening, Cyrus Harding gave the signal to halt. They were now outside the forest, at the beginning of the powerful spurs which supported Mount Franklin towards the west. At a distance of some hundred feet flowed the Red Creek, and consequently plenty of fresh water was within their reach.

The camp was soon organized. In less than an hour, on the edge of the forest, among the trees, a hut of branches interlaced with creepers, and pasted over with clay, offered a tolerable shelter. Their geological researches were put off till the next day. Supper was prepared, a good fire

blazed before the hut, the roast turned, and at eight o'clock, whilst one of the settlers watched to keep up the fire, in case any wild beasts should prowl in the neighbourhood, the others slept soundly.

The next day, the 21st of April, Cyrus Harding, accompanied by Herbert, went to look for the soil of ancient formation, on which he had already discovered a specimen of ore. They found the vein above ground, near the source of the creek, at the foot of one of the north-eastern spurs. This ore, very rich in iron, enclosed in its fusible vein-stone, was perfectly suited to the mode of reduction which the engineer intended to employ; that is, the Catalan method, but simplified, as it is used in Corsica. In fact, the Catalan method, properly so called, requires the construction of kilns and crucibles, in which the ore and the coal, placed in alternate layers, are transformed and reduced. But Cyrus Harding intended to economize these constructions, and wished simply to form, with the ore and the coal, a cubic mass, to the centre of which he would direct the wind from his bellows. Doubtless, it was the proceeding employed by Tubal Cain, and the first metallurgists of the inhabited world. Now that which had succeeded with the grandson of Adam, and which still yielded good results in countries rich in ore and fuel, could not but succeed with the settlers in Lincoln Island.

The coal, as well as the ore, was collected without trouble

on the surface of the ground. They first broke the ore into little pieces, and cleansed them with the hand from the impurities which soiled their surface. Then coal and ore were arranged in heaps and in successive layers, as the charcoal-burner does with the wood which he wishes to carbonize. In this way, under the influence of the air projected by the blowing-machine, the coal would be transformed into carbonic acid, then into oxyde of carbon, its use being to reduce the oxyde of iron, that is to say, to rid it of the oxygen.

Thus the engineer proceeded. The bellows of sealskin, furnished at its extremity with a nozzle of clay, which had been previously fabricated in the pottery kiln, was established near the heap of ore. Moved by a mechanism which consisted of a frame, cords of fibre and counterpoise, he threw into the mass an abundance of air, which by raising the temperature also concurred with the chemical transformation to produce in time pure iron.

The operation was difficult. All the patience, all the ingenuity of the settlers was needed ; but at last it succeeded, and the result was a lump of iron, reduced to a spongy state, which it was necessary to shingle and fagot, that is to say, to forge so as to expel from it the liquefied vein-stone. These amateur smiths had, of course, no hammer ; but they were in no worse a situation than the

first metallurgist, and therefore did what, no doubt, he had to do.

A handle was fixed to the first lump, and was used as a hammer to forge the second on a granite anvil, and thus they obtained a coarse but useful metal. At length, after many trials and much fatigue, on the 25th of April several bars of iron were forged, and transformed into tools, crow-bars, pincers, pickaxes, spades, &c., which Pencroft and Neb declared to be real jewels.

But the metal was not yet in its most serviceable state, that is, of steel. Now steel is a combination of iron and coal, which is extracted, either from the liquid ore, by taking from it the excess of coal, or from the iron by adding to it the coal which was wanting. The first, obtained by the decarburation of the metal, gives natural or puddled steel; the second, produced by the carbururation of the iron, gives steel of cementation.

It was the last which Cyrus Harding intended to forge, as he possessed iron in a pure state. He succeeded by heating the metal with powdered coal in a crucible which had previously been manufactured from clay suitable for the purpose.

He then worked this steel, which is malleable both when hot or cold, with the hammer. Neb and Pencroft, cleverly directed, made hatchets, which, heated red-hot, and plunged suddenly into cold water, acquired an excellent temper.

Other instruments, of course roughly fashioned, were also manufactured ; blades for planes, axes, hatchets, pieces of steel to be transformed into saws, chisels ; then iron for spades, pickaxes, hammers, nails, &c. At last, on the 5th of May, the metallic period ended, the smiths returned to the Chimneys, and new work would soon authorize them to take a fresh title.

CHAPTER XVI

THE QUESTION OF A DWELLING IS AGAIN DISCUSSED—
PENCROFT'S FANCIES—EXPLORING TO THE NORTH
OF THE LAKE—THE NORTHERN EDGE OF THE PLA-
TEAU—SNAKES—THE EXTREMITY OF THE LAKE—
TOP'S UNEASINESS—TOP SWIMMING—A COMBAT
UNDER THE WATER—THE DUGONG.

IT was the 6th of May, a day which corresponds to the 6th of November in the countries of the northern hemisphere. The sky had been obscured for some days, and it was of importance to make preparations for the winter. However, the temperature was not as yet much lower, and a centigrade thermometer, transported to Lincoln Island, would still have marked an average of ten to twelve degrees above zero. This was not surprising, since Lincoln Island, probably situated between the thirty-fifth and fortieth parallel, would be subject, in the southern hemisphere, to the same climate as Sicily or Greece in the

northern hemisphere. But as Greece and Sicily have severe cold, producing snow and ice, so doubtless would Lincoln Island in the severest part of the winter, and it was advisable to provide against it.

In any case if cold did not yet threaten them, the rainy season would begin, and on this lonely island, exposed to all the fury of the elements, in mid ocean, bad weather would be frequent, and probably terrible. The question of a more comfortable dwelling than the Chimneys must therefore be seriously considered and promptly resolved on.

Pencroft, naturally, had some predilection for the retreat which he had discovered, but he well understood that another must be found. The Chimneys had been already visited by the sea, under circumstances which are known, and it would not do to be exposed again to a similar accident.

"Besides," added Cyrus Harding, who this day was talking of these things with his companions, "we have some precautions to take."

"Why? The island is not inhabited," said the reporter.

"That is probable," replied the engineer, "although we have not yet explored the interior; but if no human beings are found, I fear that dangerous animals may abound. It is necessary to guard against a possible attack, so that we shall not be obliged to watch every night, or to keep up a fire. And then, my friends, we must foresee everything.

We are here in a part of the Pacific often frequented by Malay pirates—”

“What!” said Herbert, “at such a distance from land?”

“Yes, my boy,” replied the engineer. “These pirates are bold sailors as well as formidable enemies, and we must take measures accordingly.”

“Well,” replied Pencroft, “we will fortify ourselves against savages with two legs as well as against savages with four. But, captain, will it not be best to explore every part of the island before undertaking anything else?”

“That would be best,” added Gideon Spilett.

“Who knows if we might not find on the opposite side one of the caverns which we have searched for in vain here?”

“That is true,” replied the engineer, “but you forget, my friends, that it will be necessary to establish ourselves in the neighbourhood of a watercourse, and that, from the summit of Mount Franklin, we could not see towards the west, either stream or river. Here, on the contrary, we are placed between the Mercy and Lake Grant, an advantage which must not be neglected. And, besides, this side, looking towards the east, is not exposed as the other is to the trade-winds, which in this hemisphere blow from the north-west.”

“Then, captain,” replied the sailor, “let us build a

house on the edge of the lake. Neither bricks nor tools are wanting now. After having been brickmakers, potters, smelters, and smiths, we shall surely know how to be masons!"

"Yes, my friend; but before coming to any decision we must consider the matter thoroughly. A natural dwelling would spare us much work, and would be a surer retreat, for it would be as well defended against enemies from the interior as those from outside."

"That is true, Cyrus," replied the reporter, "but we have already examined all that mass of granite, and there is not a hole, not a cranny!"

"No, not one!" added Pencroft. "Ah, if we were able to dig out a dwelling in that cliff, at a good height, so as to be out of the reach of harm, that would be capital! I can see that on the front which looks seaward, five or six rooms—"

"With windows to light them!" said Herbert, laughing.

"And a staircase to climb up to them!" added Neb.

"You are laughing," cried the sailor, "and why? What is there impossible in what I propose? Haven't we got pickaxes and spades? Won't Captain Harding be able to make powder to blow up the mine? Isn't it true, captain, that you will make powder the very day we want it?"

Cyrus Harding listened to the enthusiastic Pencroft developing his fanciful projects. To attack this mass of

granite, even by a mine, was Herculean work, and it was really vexing that nature could not help them at their need. But the engineer did not reply to the sailor except by proposing to examine the cliff more attentively, from the mouth of the river to the angle which terminated it on the north.

They went out, therefore, and the exploration was made with extreme care over an extent of nearly two miles. But in no place, in the bare, straight cliff, could any cavity be found. The nests of the rock pigeons which fluttered at its summit were only, in reality, holes bored at the very top, and on the irregular edge of the granite.

It was a provoking circumstance, and as to attacking this cliff, either with pickaxe or with powder, so as to effect a sufficient excavation, it was not to be thought of. It so happened that, on all this part of the shore, Pencroft had discovered the only habitable shelter, that is to say, the Chimneys, which now had to be abandoned.

The exploration ended, the colonists found themselves at the north angle of the cliff, where it terminated in long slopes which died away on the shore. From this place, to its extreme limit in the west, it only formed a sort of declivity, a thick mass of stones, earth, and sand, bound together by plants, bushes, and grass, inclined at an angle of only forty-five degrees. Clumps of trees grew on these slopes, which were also carpeted with thick grass. But the
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vegetation did not extend far, and a long, sandy plain, which began at the foot of these slopes, reached to the beach.

Cyrus Harding thought, not without reason, that the overplus of the lake must overflow on this side. The excess of water furnished by the Red Creek must also escape by some channel or other. Now the engineer had not found this channel on any part of the shore already explored, that is to say, from the mouth of the stream on the west of Prospect Heights.

The engineer now proposed to his companions to climb the slope, and to return to the Chimneys by the heights, while exploring the northern and eastern shores of the lake. The proposal was accepted, and in a few minutes Herbert and Neb were on the upper plateau. Cyrus Harding, Gideon Spilett, and Pencroft followed with more sedate steps.

The beautiful sheet of water glittered through the trees under the rays of the sun. In this direction the country was charming. The eye feasted on the groups of trees. Some old trunks, bent with age, showed black against the verdant grass which covered the ground. Crowds of brilliant cockatoos screamed among the branches, moving prisms, hopping from one bough to another.

The settlers instead of going directly to the north bank of the lake, made a circuit round the edge of the plateau,

so as to join the mouth of the creek on its left bank. It was a *détour* of more than a mile and a half. Walking was easy, for the trees widely spread, left a considerable space between them. The fertile zone evidently stopped at this point, and vegetation would be less vigorous in the part between the course of the Creek and the Mercy.

Cyrus Harding and his companions walked over this new ground with great care. Bows, arrows, and sticks with sharp iron points were their only weapons. However, no wild beast showed itself, and it was probable that these animals frequented rather the thick forests in the south; but the settlers had the disagreeable surprise of seeing Top stop before a snake of great size, measuring from fourteen to fifteen feet in length. Neb killed it by a blow from his stick. Cyrus Harding examined the reptile, and declared it not venomous, for it belonged to that species of diamond serpents which the natives of New South Wales rear. But it was possible that others existed whose bite was mortal, such as the deaf vipers with forked tails, which rise up under the feet, or those winged snakes, furnished with two ears, which enable them to proceed with great rapidity. Top, the first moment of surprise over, began a reptile chase with such eagerness, that they feared for his safety. His master called him back directly.

The mouth of the Red Creek, at the place where it entered into the lake, was soon reached. The explorers

recognized on the opposite shore the point which they had visited on their descent from Mount Franklin. Cyrus Harding ascertained that the flow of water into it from the creek was considerable. Nature must therefore have provided some place for the escape of the overplus. This doubtless formed a fall, which, if it could be discovered, would be of great use.

The colonists, walking apart, but not straying far from each other, began to skirt the edge of the lake, which was very steep. The water appeared to be full of fish, and Pencroft resolved to make some fishing-rods, so as to try and catch some.

The north-east point was first to be doubled. It might have been supposed that the discharge of water was at this place, for the extremity of the lake was almost on a level with the edge of the plateau. But no signs of this were discovered, and the colonists continued to explore the bank, which, after a slight bend, descended parallel to the shore.

On this side the banks were less woody, but clumps of trees, here and there, added to the picturesqueness of the country. Lake Grant was viewed from thence in all its extent, and no breath disturbed the surface of its waters. Top, in beating the bushes, put up flocks of birds of different kinds, which Gideon Spilett and Herbert saluted with arrows. One was hit by the lad, and fell into some

marshy grass. Top rushed forward, and brought a beautiful swimming bird, of a slate colour, short beak, very developed frontal plate, and wings edged with white. It was a "coot," the size of a large partridge, belonging to the group of macrodactyles which form the transition between the order of wading birds and that of palmipeds. Sorry game, in truth, and its flavour is far from pleasant. But Top was not so particular in these things as his masters, and it was agreed that the coot should be for his supper.

The settlers were now following the eastern bank of the lake, and they would not be long in reaching the part which they already knew. The engineer was much surprised at not seeing any indication of the discharge of water. The reporter and the sailor talked with him, and he could not conceal his astonishment.

At this moment Top, who had been very quiet till then, gave signs of agitation. The intelligent animal went backwards and forwards on the shore, stopped suddenly, and looked at the water, one paw raised, as if he was pointing at some invisible game; then he barked furiously, and was suddenly silent.

Neither Cyrus Harding nor his companions had at first paid any attention to Top's behaviour; but the dog's barking soon became so frequent that the engineer noticed it.

"What is there there, Top?" he asked.

The dog bounded towards his master, seeming to be very uneasy, and then rushed again towards the bank. Then, all at once, he plunged into the lake.

"Here, Top!" cried Cyrus Harding, who did not like his dog to venture into the treacherous water.

"What's happening down there?" asked Pencroft, examining the surface of the lake.

"Top smells some amphibious creature," replied Herbert.

"An alligator, perhaps," said the reporter.

"I do not think so," replied Harding. "Alligators are only met with in regions less elevated in latitude.

Meanwhile Top had returned at his master's call, and had regained the shore: but he could not stay quiet; he plunged in amongst the tall grass, and guided by instinct, he appeared to follow some invisible being which was slipping along under the surface of the water. However, the water was calm, not a ripple disturbed its surface. Several times the settlers stopped on the bank, and observed it attentively. Nothing appeared. There was some mystery there.

The engineer was puzzled.

"Let us pursue this exploration to the end," said he.

Half an hour after they had all arrived at the south-east angle of the lake, on Prospect Heights. At this point the examination of the banks of the lake was considered

finished, and yet the engineer had not been able to discover how and where the waters were discharged. "There is no doubt this overflow exists," he repeated, "and since it is not visible it must go through the granite cliff at the west!"

"But what importance do you attach to knowing that, my dear Cyrus?" asked Gideon Spilett.

"Considerable importance," replied the engineer; "for if it flows through the cliff there is probably some cavity, which it would be easy to render habitable after turning away the water."

"But is it not possible, captain, that the water flows away at the bottom of the lake," said Herbert, "and that it reaches the sea by some subterranean passage?"

"That might be," replied the engineer, "and should it be so we shall be obliged to build our house ourselves, since nature has not done it for us."

The colonists were about to begin to traverse the plateau to return to the Chimneys, when Top gave new signs of agitation. He barked with fury, and before his master could restrain him, he had plunged a second time into the lake.

All ran towards the bank. The dog was already more than twenty feet off, and Cyrus was calling him back, when an enormous head emerged from the water, which did not appear to be deep in that place.

Herbert recognized directly the species of amphibian to

which the tapering head, with large eyes, and adorned with long silky mustaches, belonged.

"A lamantin!" he cried.

It was not a lamantin, but one of that species of the order of cetaceans, which bear the name of the "dugong," for its nostrils were open at the upper part of its snout. The enormous animal rushed on the dog, who tried to escape by returning towards the shore. His master could do nothing to save him, and before Gideon Spilett or Herbert thought of bending their bows, Top, seized by the dugong, had disappeared beneath the water.

Neb, his iron-tipped spear in his hand, wished to go to Top's help, and attack the dangerous animal in its own element.

"No, Neb," said the engineer, restraining his courageous servant.

Meanwhile a struggle was going on beneath the water, an inexplicable struggle, for in his situation Top could not possibly resist; and judging by the bubbling of the surface it must be also a terrible struggle, and could not but terminate in the death of the dog! But suddenly, in the middle of a foaming circle, Top reappeared. Thrown in the air by some unknown power, he rose ten feet above the surface of the lake, fell again into the midst of the agitated waters, and then soon gained the shore, without any severe wounds, miraculously saved.

Cyrus Harding and his companions could not understand it. What was not less inexplicable was that the struggle still appeared to be going on. Doubtless, the dugong, attacked by some powerful animal, after having released the dog, was fighting on its own account. But it did not last long. The water became red with blood, and the body of the dugong, emerging from the sheet of scarlet which spread around, soon stranded on a little beach at the south angle of the lake. The colonists ran towards it. The dugong was dead. It was an enormous animal, fifteen or sixteen feet long, and must have weighed from three to four thousand pounds. At its neck was a wound, which appeared to have been produced by a sharp blade.

What could the amphibious creature have been, who, by this terrible blow had destroyed the formidable dugong? No one could tell, and much interested in this incident, Harding and his companions returned to the Chimneys.

CHAPTER XVII.

VISIT TO THE LAKE—THE INDICATING CURRENT—CYRUS
HARDING'S PROJECTS—THE FAT OF THE DUGONG—
EMPLOYING SHISTOSE PYRITES—SULPHATE OF IRON
—HOW GLYCERINE IS MADE—SOAP—SALTPETRE—
SULPHURIC ACID—AZOTIC ACID—THE NEW FALL.

THE next day, the 7th of May, Harding and Gideon Spilett, leaving Neb to prepare breakfast, climbed Prospect Heights, whilst Herbert and Pencroft ascended by the river, to renew their store of wood.

The engineer and the reporter soon reached the little beach on which the dugong had been stranded. Already flocks of birds had attacked the mass of flesh, and had to be driven away with stones, for Cyrus wished to keep the fat for the use of the colony. As to the animal's flesh, it would furnish excellent food, for in the islands of the Malay archipelago and elsewhere, it is especially reserved for the table of the native princes. But that was Neb's affair.

At this moment Cyrus Harding had other thoughts. He was much interested in the incident of the day before. He wished to penetrate the mystery of that submarine combat, and to ascertain what monster could have given the dugong so strange a wound. He remained at the edge of the lake, looking, observing ; but nothing appeared under the tranquil waters, which sparkled in the first rays of the rising sun.

At the beach, on which lay the body of the dugong, the water was tolerably shallow, but from this point the bottom of the lake sloped gradually, and it was probable that the depth was considerable in the centre. The lake might be considered as a large centre basin, which was filled by the water from the Red Creek.

"Well, Cyrus," said the reporter, "there seems to be nothing suspicious in this water."

"No, my dear Spilett," replied the engineer, "and I really do not know how to account for the incident of yesterday."

"I acknowledge," returned Spilett, "that the wound given to this creature is, at least, very strange, and I cannot explain either how Top was so vigorously cast up out of the water. One could have thought that a powerful arm hurled him up, and that the same arm with a dagger killed the dugong !"

"Yes," replied the engineer, who had become thought-

ful; "there is something there that I cannot understand. But do you better understand either, my dear Spilett, in what way I was saved myself—how I was drawn from the waves, and carried to the downs? No! Is it not true? Now, I feel sure that there is some mystery there, which, doubtless, we shall discover some day. Let us observe, but do not dwell on these singular incidents before our companions. Let us keep our remarks to ourselves, and continue our work."

It will be remembered that the engineer had not as yet been able to discover the place where the surplus water escaped, but he knew it must exist somewhere. He was much surprised to see a strong current at this place. By throwing in some bits of wood he found that it set towards the southern angle. He followed the current, and arrived at the south point of the lake.

There was there a sort of depression in the water, as if it was suddenly lost in some fissure in the ground.

Harding listened; placing his ear to the level of the lake, he very distinctly heard the noise of a subterranean fall.

"There," said he, rising, "is the discharge of the water; there, doubtless, by a passage in the granite cliff, it joins the sea, through cavities which we can use to our profit. Well, I can find it!"

The engineer cut a long branch, stripped it of its leaves, and, plunging it into the angle between the two banks, he

found that there was a large hole one foot only beneath the surface of the water. This hole was the opening so long looked for in vain, and the force of the current was such that the branch was torn from the engineer's hands and disappeared.

"There is no doubt about it now," repeated Harding. "There is the outlet, and I will lay it open to view!"

"How?" asked Gideon Spilett.

"By lowering the level of the water of the lake three feet."

"And how will you lower the level?"

"By opening another outlet larger than this."

"At what place, Cyrus?"

"At the part of the bank nearest the coast."

"But it is a mass of granite!" observed Spilett.

"Well," replied Cyrus Harding, "I will blow up the granite, and the water escaping, will subside, so as to lay bare this opening—"

"And make a waterfall, by falling on to the beach," added the reporter.

"A fall that we shall make use of!" replied Cyrus. "Come, come!"

The engineer hurried away his companion, whose confidence in Harding was such that he did not doubt the enterprise would succeed. And yet, how was this granite wall to be opened without powder, and with imperfect

instruments? Was not this work upon which the engineer was so bent above their strength?

When Harding and the reporter entered the Chimneys, they found Herbert and Pencroft unloading their raft of wood.

"The woodmen have just finished, captain," said the sailor, laughing, "and when you want masons—"

"Masons,—no, but chemists," replied the engineer.

"Yes," added the reporter, "we are going to blow up the island—"

"Blow up the island?" cried Pencroft.

"Part of it, at least," replied Spilett.

"Listen to me, my friends," said the engineer. And he made known to them the result of his observations.

According to him, a cavity, more or less considerable, must exist in the mass of granite which supported Prospect Heights, and he intended to penetrate into it. To do this, the opening through which the water rushed must first be cleared, and the level lowered by making a larger outlet. Therefore an explosive substance must be manufactured, which would make a deep trench in some other part of the shore. This was what Harding was going to attempt with the minerals which nature placed at his disposal.

It is useless to say with what enthusiasm all, especially Pencroft, received this project. To employ great means, open the granite, create a cascade, that suited the sailor,

And he would just as soon be a chemist as a mason or bootmaker, since the engineer wanted chemicals. He would be all that they liked, "even a professor of dancing and deportment," said he to Neb, if that was ever necessary.

Neb and Pencroft were first of all told to extract the grease from the dugong, and to keep the flesh, which was destined for food. Such perfect confidence had they in the engineer, that they set out directly, without even asking a question. A few minutes after them, Cyrus Harding, Herbert, and Gideon Spilett, dragging the hurdle, went towards the vein of coals, where those shistose pyrites abound which are met with in the most recent transition soil, and of which Harding had already found a specimen. All the day being employed in carrying a quantity of these stones to the Chimneys, by evening they had several tons.

The next day, the 8th of May, the engineer began his manipulations. These shistose pyrites being composed principally of coal, flint, alumina, and sulphuret of iron—the latter in excess—it was necessary to separate the sulphuret of iron, and transform it into sulphate as rapidly as possible. The sulphate obtained, the sulphuric acid could then be extracted.

This was the object to be attained. Sulphuric acid is one of the agents the most frequently employed, and the

manufacturing importance of a nation can be measured by the consumption which is made of it. This acid would later be of great use to the settlers, in the manufacturing of candles, tanning skins, &c., but this time the engineer reserved it for another use.

Cyrus Harding chose, behind the Chimneys, a site where the ground was perfectly level. On this ground he placed a layer of branches and chopped wood, on which were piled some pieces of shistose pyrites, buttressed one against the other, the whole being covered with a thin layer of pyrites, previously reduced to the size of a nut.

This done, they set fire to the wood, the heat was communicated to the shist, which soon kindled, since it contains coal and sulphur. Then new layers of bruised pyrites were arranged so as to form an immense heap, the exterior of which was covered with earth and grass, several air-holes being left, as if it was a stack of wood which was to be carbonized to make charcoal.

They then left the transformation to complete itself, and it would not take less than ten or twelve days for the sulphuret of iron to be changed into sulphate of iron and the alumina into sulphate of alumina, two equally soluble substances, the others, flint, burnt coal, and cinders, not being so.

While this chemical work was going on, Cyrus Harding proceeded with other operations, which were pursued with more than zeal,—it was eagerness.

Neb and Pencroft had taken away the fat from the dugong, and placed it in large earthen pots. It was then necessary to separate the glycerine from the fat by saponifying it. Now, to obtain this result, it had to be treated either with soda or lime. In fact, one or other of these substances, after having attacked the fat, would form a soap by separating the glycerine, and it was just this glycerine which the engineer wished to obtain. There was no want of lime, only treatment by lime would give calcareous soap, insoluble, and consequently useless, whilst treatment by soda would furnish, on the contrary, a soluble soap, which could be put to domestic use. Now, a practical man, like Cyrus Harding, would rather try to obtain soda. Was this difficult? No; for marine plants abounded on the shore, glass-wort, ficoides, and all those fucaceæ which form wrack. A large quantity of these plants was collected, first dried, then burnt in holes in the open air. The combustion of these plants was kept up for several days, and the result was a compact grey mass, which has been long known under the name of "natural soda."

This obtained, the engineer treated the fat with soda, which gave both a soluble soap and that neutral substance glycerine.

But this was not all. Cyrus Harding still needed, in view of his future preparation, another substance, azote of

potash, which is better known under the name of salt of nitre, or of saltpetre.

Cyrus Harding could have manufactured this substance by treating the carbonate of potash, which would be easily extracted from the cinders of the vegetables, by azotic acid. But this acid was wanting, and he would have been in some difficulty, if nature had not happily furnished the saltpetre, without giving them any other trouble than that of picking it up. Herbert found a vein of it at the foot of Mount Franklin, and they had nothing to do but purify this salt.

These different works lasted a week. They were finished before the transformation of the sulphuret into sulphate of iron had been accomplished. During the following days the settlers had time to construct a furnace of bricks of a particular arrangement, to serve for the distillation of the sulphate of iron when it had been obtained. All this was finished about the 18th of May, nearly at the time when the chemical transformation terminated. Gideon Spilett, Herbert, Neb, and Pencroft, skilfully directed by the engineer, had become most clever workmen. Before all masters, necessity is the one most listened to, and who teaches the best.

When the heap of pyrites had been entirely reduced by fire, the result of the operation, consisting of sulphate of iron, sulphate of alumina, flint, remains of coal, and cinders,

was placed in a basin full of water. They stirred this mixture, let it settle, then decanted it, and obtained a clear liquid, containing in solution sulphate of iron and sulphate of alumina, the other matters remaining solid since they are insoluble. Lastly, this liquid being partly evaporated, crystals of sulphate of iron were deposited, and the not evaporated liquid, which contained the sulphate of alumina, was thrown away.

Cyrus Harding had now at his disposal a large quantity of these sulphate of iron crystals, from which the sulphuric acid had to be extracted. The making of sulphuric acid is a very expensive manufacture. Considerable works are necessary—a special set of tools, an apparatus of platina, leaden chambers, unassailable by the acid, and in which the transformation is performed, &c. The engineer had none of these at his disposal, but he knew that, in Bohemia especially, sulphuric acid is manufactured by very simple means, which have also the advantage of producing it to a superior degree of concentration. It is thus that the acid known under the name of Nordhausen acid is made.

To obtain sulphuric acid, Cyrus Harding had only one operation to make, to calcine the sulphate of iron crystals in a close vase, so that the sulphuric acid should distil in vapour, which vapour, by condensation, would produce the acid.

The crystals were placed in pots, and the heat from the

furnace would distil the sulphuric acid. The operation was successfully completed, and on the 20th of May, twelve days after commencing it, the engineer was the possessor of the agent which later he hoped to use in so many different ways.

Now, why did he wish for this agent? Simply to produce azotic acid; and that was easy, since saltpetre, attacked by sulphuric acid, gives this acid by distillation.

But, after all, how was he going to employ this azotic acid? His companions were still ignorant of this, for he had not informed them of the result at which he aimed.

However, the engineer had nearly accomplished his purpose, and by a last operation he would procure the substance which had given so much trouble.

Taking some azotic acid, he mixed it with glycerine, which had been previously concentrated by evaporation, subjected to the water-bath, and he obtained, without even employing a refrigerant mixture, several pints of an oily yellow mixture.

This last operation Cyrus Harding had made alone, in a retired place, at a distance from the Chimneys, for he feared the danger of an explosion, and when he showed a bottle of this liquid to his friends, he contented himself with saying,—

“Here is nitro-glycerine!”

It was really this terrible production, of which the

explosive power is perhaps tenfold that of ordinary powder, and which has already caused so many accidents. However, since a way has been found to transform it into dynamite, that is to say, to mix with it some solid substance, clay or sugar, porous enough to hold it, the dangerous liquid has been used with more security. But dynamite was not yet known at the time when the settlers worked in Lincoln Island.

"And is it that liquid that is going to blow up our rocks?" said Pencroft incredulously.

"Yes, my friend," replied the engineer, "and this nitro-glycerine will produce so much the more effect, as the granite is extremely hard, and will oppose a greater resistance to the explosion."

"And when shall we see this, captain?"

"To-morrow, as soon as we have dug a hole for the mine," replied the engineer.

The next day, the 21st of May, at daybreak, the miners went to the point which formed the eastern shore of Lake Grant, and was only five hundred feet from the coast. At this place, the plateau inclined downwards from the waters, which were only restrained by their granite case. Therefore, if this case was broken, the water would escape by the opening and form a stream, which, flowing over the inclined surface of the plateau, would rush on to the beach. Consequently, the level of the lake would be

greatly lowered, and the opening where the water escaped would be exposed, which was their final aim.

Under the engineer's directions, Pencroft, armed with a pickaxe, which he handled skilfully and vigorously, attacked the granite. The hole was made on the point of the shore, slanting, so that it should meet a much lower level than that of the water of the lake. In this way the explosive force, by scattering the rock, would open a large place for the water to rush out.

The work took some time, for the engineer, wishing to produce a great effect, intended to devote not less than seven quarts of nitro-glycerine to the operation. But Pencroft, relieved by Neb, did so well, that towards four o'clock in the evening, the mine was finished.

Now the question of setting fire to the explosive substance was raised. Generally, nitro-glycerine is ignited by amorces of fulminate, which in bursting cause the explosion. A shock is therefore needed to produce the explosion, for, simply lighted, this substance would burn without exploding.

Cyrus Harding would certainly have been able to fabricate an amorce. In default of fulminate, he could easily obtain a substance similar to gun-cotton, since he had azotic acid at his disposal. This substance, pressed in a cartridge, and introduced amongst the nitro-glycerine, would burst by means of a match, and cause the explosion.

But Cyrus Harding knew that nitro-glycerine would explode by a shock. He resolved to employ this means, and try another way, if this did not succeed.

In fact, the blow of a hammer on a few drops of nitro-glycerine, spread out on a hard surface, was enough to create an explosion. But the operator could not be there to give the blow, without becoming a victim to the operation. Harding, therefore, thought of suspending a mass of iron, weighing several pounds, by means of a fibre, to an upright just above the mine. Another long fibre, previously impregnated with sulphur, was attached to the middle of the first, by one end, whilst the other lay on the ground several feet distant from the mine. The second fibre being set on fire, it would burn till it reached the first. This catching fire in its turn, would break, and the mass of iron would fall on the nitro-glycerine. This apparatus being then arranged, the engineer, after having sent his companions to a distance, filled the hole, so that the nitro-glycerine was on a level with the opening; then he threw a few drops of it on the surface of the rock, above which the mass of iron was already suspended.

This done, Harding lit the end of the sulphured fibre, and leaving the place, he returned with his companions to the Chimneys.

The fibre was intended to burn five and twenty minutes, and, in fact, five and twenty minutes afterwards a most

tremendous explosion was heard. The island appeared to tremble to its very foundation. Stones were projected in the air as if by the eruption of a volcano. The shock produced by the displacing of the air was such, that the rocks of the Chimneys shook. The settlers, although they were more than two miles from the mine, were thrown on the ground.

They rose, climbed the plateau, and ran towards the place where the bank of the lake must have been shattered by the explosion.

A cheer escaped them! A large rent was seen in the granite! A rapid stream of water rushed foaming across the plateau and dashed down a height of three hundred feet on to the beach!

CHAPTER XVIII.

PENCROFT NOW DOUBTS NOTHING—THE OUTLET OF THE LAKE—A SUBTERRANEAN DESCENT—THE WAY THROUGH THE GRANITE—TOP DISAPPEARS—THE CENTRAL CAVERN—THE LOWER WELL—MYSTERY—USING THE PICKAXE—THE RETURN.

CYRUS HARDING'S project had succeeded, but, according to his usual habit, he showed no satisfaction; with closed lips and a fixed look, he remained motionless. Herbert was in ecstasies, Neb bounded with joy, Pengroft nodded his great head, murmuring these words,—

“Come, our engineer gets on capitally!”

The nitro-glycerine had indeed acted powerfully. The opening which it had made was so large that the volume of water which escaped through this new outlet was at least treble that which before passed through the old one. The result was, that a short time after the operation the level of the lake would be lowered two feet, or more.

The settlers went to the Chimneys, to take some pick-axes, iron-tipped spears, string made of fibres, flint and steel; they then returned to the plateau, Top accompanying them.

On the way the sailor could not help saying to the engineer,—

“Don’t you think, captain, that by means of that charming liquid you have made, one could blow up the whole of our island?”

“Without any doubt, the island, continents, and the world itself,” replied the engineer. “It is only a question of quantity.”

“Then could you not use this nitro-glycerine for loading fire-arms?” asked the sailor.

“No, Pencroft; for it is too explosive a substance. But it would be easy to make some gun-cotton, or even ordinary powder, as we have azotic acid, saltpetre, sulphur, and coal. Unhappily, it is the guns which we have not got.”

“Oh, captain,” replied the sailor, “with a little determination—”

Pencroft had erased the word “impossible” from the dictionary of Lincoln Island.

The settlers, having arrived at Prospect Heights, went immediately towards that point of the lake near which was the old opening now uncovered. This outlet had now

become practicable, since the water no longer rushed through it, and it would doubtless be easy to explore the interior.

In a few minutes the settlers had reached the lower point of the lake, and a glance showed them that the object had been attained.

In fact, in the side of the lake, and now above the surface of the water, appeared the long-looked-for opening. A narrow ridge, left bare by the retreat of the water, allowed them to approach it. This orifice was nearly twenty feet in width, but scarcely two in height. It was like the mouth of a drain at the edge of the pavement, and therefore did not offer an easy passage to the settlers; but Neb and Pencroft, taking their pickaxes, soon made it of a suitable height.

The engineer then approached, and found that the sides of the opening, in its upper part at least, had not a slope of more than from thirty to thirty-five degrees. It was therefore practicable, and, provided that the declivity did not increase, it would be easy to descend even to the level of the sea. If then, as was probable, some vast cavity existed in the interior of the granite, it might, perhaps, be of great use.

"Well, captain, what are we stopping for?" asked the sailor, impatient to enter the narrow passage. "You see Top has got before us!"

"Very well," replied the engineer. "But we must see our way. Neb, go and cut some resinous branches."

Neb and Herbert ran to the edge of the lake, shaded with pines and other green trees, and soon returned with some branches, which they made into torches. The torches were lighted with flint and steel, and Cyrus Harding leading, the settlers ventured into the dark passage, which the overplus of the lake had formerly filled.

Contrary to what might have been supposed, the diameter of the passage increased as the explorers proceeded, so that they very soon were able to stand upright. The granite, worn by the water for an infinite time, was very slippery, and falls were to be dreaded. But the settlers were all attached to each other by a cord, as is frequently done in ascending mountains. Happily some projections of the granite, forming regular steps, made the descent less perilous. Drops, still hanging from the rocks, shone here and there under the light of the torches, and the explorers guessed that the sides were clothed with innumerable stalactites. The engineer examined this black granite. There was not a stratum, not a break in it. The mass was compact, and of an extremely close grain. The passage dated, then, from the very origin of the island. It was not the water which little by little had hollowed it. Pluto and not Neptune had bored it with his own hand, and on the wall traces of an eruptive work could be dis-

tinguished, which all the washing of the water had not been able totally to efface.

The settlers descended very slowly. They could not but feel a certain awe, in thus venturing into these unknown depths, for the first time visited by human beings. They did not speak, but they thought; and the thought came to more than one, that some polypus or other gigantic cephalopod might inhabit the interior cavities, which were in communication with the sea. However, Top kept at the head of the little band, and they could rely on the sagacity of the dog, who would not fail to give the alarm if there was any need for it.

After having descended about a hundred feet, following a winding road, Harding, who was walking on before, stopped, and his companions came up with him. The place where they had halted was wider, so as to form a cavern of moderate dimensions. Drops of water fell from the vault, but that did not prove that they oozed through the rock. They were simply the last traces left by the torrent which had so long thundered through this cavity, and the air there was pure though slightly damp, but producing no mephitic exhalation.

"Well, my dear Cyrus," said Gideon Spilett, "here is a very secure retreat, well hid in the depths of the rock, but it is, however, uninhabitable."

"Why uninhabitable?" asked the sailor.

"Because it is too small and too dark."

"Couldn't we enlarge it, hollow it out, make openings to let in light and air?" replied Pencroft, who now thought nothing impossible.

"Let us go on with our exploration," said Cyrus Harding. "Perhaps lower down, nature will have spared us this labour."

"We have only gone a third of the way," observed Herbert.

"Nearly a third," replied Harding, "for we have descended a hundred feet from the opening, and it is not impossible that a hundred feet further down—"

"Where is Top?" asked Neb, interrupting his master.

They searched the cavern, but the dog was not there.

"Most likely he has gone on," said Pencroft.

"Let us join him," replied Harding.

The descent was continued. The engineer carefully observed all the deviations of the passage, and notwithstanding so many détours, he could easily have given an account of its general direction, which went towards the sea.

The settlers had gone some fifty feet farther, when their attention was attracted by distant sounds which came up from the depths. They stopped and listened. These sounds, carried through the passage as t'rough an acoustic tube, came clearly to the ear.

"That is Top barking!" cried Herbert.

"Yes," replied Pencroft, "and our brave dog is barking furiously!"

"We have our iron-tipped spears," said Cyrus Harding. "Keep on your guard, and forward!"

"It is becoming more and more interesting," murmured Gideon Spilett in the sailor's ear, who nodded. Harding and his companions rushed to the help of their dog. Top's barking became more and more perceptible, and it seemed strangely fierce. Was he engaged in a struggle with some animal whose retreat he had disturbed? Without thinking of the danger to which they might be exposed, the explorers were now impelled by an irresistible curiosity, and in a few minutes, sixteen feet lower they rejoined Top.

There the passage ended in a vast and magnificent cavern. Top was running backwards and forwards, barking furiously. Pencroft and Neb, waving their torches, threw the light into every crevice; and at the same time, Harding, Gideon Spilett, and Herbert, their spears raised, were ready for any emergency which might arise. The enormous cavern was empty. The settlers explored it in every direction. There was nothing there, not an animal, not a human being; and yet Top continued to bark. Neither caresses nor threats could make him be silent.

"There must be a place somewhere, by which the waters of the lake reached the sea," said the engineer.

"Of course," replied Pencroft, "and we must take care not to tumble into a hole."

"Go, Top, go!" cried Harding.

The dog, excited by his master's words, ran towards the extremity of the cavern, and there redoubled his barking.

They followed him, and by the light of the torches, perceived the mouth of a regular well in the granite. It was by this that the water escaped; and this time it was not an oblique and practicable passage, but a perpendicular well, into which it was impossible to venture.

The torches were held over the opening: nothing could be seen. Harding took a lighted branch, and threw it into the abyss. The blazing resin, whose illuminating power increased still more by the rapidity of its fall, lighted up the interior of the well, but yet nothing appeared. The flame then went out with a slight hiss, which showed that it had reached the water, that is to say, the level of the sea.

The engineer, calculating the time employed in its fall, was able to calculate the depth of the well, which was found to be about ninety feet.

The floor of the cavern must thus be situated ninety feet above the level of the sea.

"Here is our dwelling," said Cyrus Harding.

"But it was occupied by some creature," replied Gideon Spilett, whose curiosity was not yet satisfied.

"Well, the creature, amphibious or otherwise, has made

off through this opening," replied the engineer, "and has left the place for us."

"Never mind," added the sailor, "I should like very much to be Top, just for a quarter of an hour, for he doesn't bark for nothing!"

Cyrus Harding looked at his dog, and those of his companions who were near him, might have heard him murmur these words,—

"Yes, I believe that Top knows more than we do about a great many things."

However, the wishes of the settlers were for the most part satisfied. Chance, aided by the marvellous sagacity of their leader, had done them great service. They had now at their disposal a vast cavern, the size of which could not be properly calculated by the feeble light of their torches, but it would certainly be easy to divide it into rooms, by means of brick partitions, or to use it, if not as a house, at least as a spacious apartment. The water which had left it could not return. The place was free.

Two difficulties remained; firstly, the possibility of lighting this excavation in the midst of solid rock; secondly, the necessity of rendering the means of access more easy. It was useless to think of lighting it from above, because of the enormous thickness of the granite which composed the ceiling; but perhaps the outer wall

next the sea might be pierced. Cyrus Harding, during the descent, had roughly calculated its obliqueness, and consequently the length of the passage, and was therefore led to believe that the outer wall could not be very thick. If light was thus obtained, so would a means of access, for it would be as easy to pierce a door as windows, and to establish an exterior ladder.

Harding made known his ideas to his companions.

"Then, captain, let us set to work!" replied Pencroft. "I have my pickaxe, and I shall soon make my way through this wall. Where shall I strike?"

"Here," replied the engineer, showing the sturdy sailor a considerable recess in the side, which would much diminish the thickness.

Pencroft attacked the granite, and for half an hour, by the light of the torches, he made the splinters fly around him. Neb relieved him, then Gideon Spilett took Neb's place.

This work had lasted two hours, and they began to fear that at this spot the wall would not yield to the pickaxe, when at a last blow, given by Gideon Spilett, the instrument, passing through the rock, fell outside.

"Hurrah! hurrah!" cried Pencroft.

The wall only measured there three feet in thickness.

Harding applied his eye to the aperture, which overlooked the ground from a height of eighty feet. Before

him was extended the sea-coast, the islet, and beyond the open sea.

Floods of light entered by this hole, inundating the splendid cavern and producing a magic effect! On its left side it did not measure more than thirty feet in height and breadth, but on the right it was enormous, and its vaulted roof rose to a height of more than eighty feet.

In some places granite pillars, irregularly disposed, supported the vaulted roof, as those in the nave of a cathedral, here forming lateral piers, there elliptical arches, adorned with pointed mouldings, losing themselves in dark bays, amid the fantastic arches of which glimpses could be caught in the shade, covered with a profusion of projections formed like so many pendants. This cavern was a picturesque mixture of all the styles of Byzantine, Roman, or Gothic architecture ever produced by the hand of man. And yet this was only the work of nature. She alone had hollowed this fairy Alhambra in a mass of granite.

The settlers were overwhelmed with admiration. Where they had only expected to find a narrow cavity, they had found a sort of marvellous palace, and Neb had taken off his hat, as if he had been transported into a temple!

Cries of admiration issued from every mouth. Hurrahs resounded, and the echo was repeated again and again till it died away in the dark naves.

"Ah, my friends!" exclaimed Cyrus Harding, "when

we have lighted the interior of this place, and have arranged our rooms and storehouses in the left part, we shall still have this splendid cavern, which we will make our study and our museum !”

“And we will call it ?—” asked Herbert.

“Granite House,” replied Harding ; a name which his companions again saluted with a cheer.

The torches were now almost consumed, and as they were obliged to return by the passage to reach the summit of the plateau, it was decided to put off the work necessary for the arrangement of their new dwelling till the next day.

Before departing, Cyrus Harding leant once more over the dark well, which descended perpendicularly to the level of the sea. He listened attentively. No noise was heard, not even that of the water, which the undulations of the surge must sometimes agitate in its depths. A flaming branch was again thrown in. The sides of the well were lighted up for an instant, but as at the first time, nothing suspicious was seen.

If some marine monster had been surprised unawares by the retreat of the water, he would by this time have regained the sea by the subterranean passage, before the new opening had been offered to him.

Meanwhile, the engineer was standing motionless, his eyes fixed on the gulf, without uttering a word.

The sailor approached him, and touching his arm, "Captain!" said he.

"What do you want, my friend?" asked the engineer, as if he had returned from the land of dreams.

"The torches will soon go out."

"Forward!" replied Cyrus Harding.

The little band left the cavern and began to ascend through the dark passage. Top closed the rear, still growling every now and then. The ascent was painful enough. The settlers rested a few minutes in the upper grotto, which made a sort of landing-place half way up the long granite staircase. Then they began to climb again.

Soon fresher air was felt. The drops of water, dried by evaporation, no longer sparkled on the walls. The flaring torches began to grow dim. The one which Neb carried went out, and if they did not wish to find their way in the dark, they must hasten.

This was done, and a little before four o'clock, at the moment when the sailor's torch went out in its turn, Cyrus Harding and his companions passed out of the passage.

CHAPTER XIX.

CYRUS HARDING'S PROJECT—THE FRONT OF GRANITE HOUSE—THE ROPE LADDER—PENCROFT'S DREAMS—AROMATIC HERBS—A NATURAL WARREN—WATER FOR THE NEW DWELLING—VIEW FROM THE WINDOWS OF GRANITE HOUSE.

THE next day, the 22nd of May, the arrangement of their new dwelling was commenced. In fact, the settlers longed to exchange the insufficient shelter of the Chimneys for this large and healthy retreat, in the midst of solid rock, and sheltered from the water both of the sea and sky. Their former dwelling was not, however, to be entirely abandoned, for the engineer intended to make a manufactory of it for important works. Cyrus Harding's first care was to find out the position of the front of Granite House from the outside. He went to the beach, and as the pickaxe when it escaped from the hands of the reporter must have fallen perpendicularly to the foot of the cliff, the finding it would be sufficient to show the place where the hole had been pierced in the granite.

The pickaxe was easily found, and the hole could be seen in a perpendicular line above the spot where it was stuck in the sand. Some rock pigeons were already flying in and out of the narrow opening; they evidently thought that Granite House had been discovered on purpose for them. It was the engineer's intention to divide the right portion of the cavern into several rooms, preceded by an entrance passage, and to light it by means of five windows and a door, pierced in the front. Pencroft was much pleased with the five windows, but he could not understand the use of the door, since the passage offered a natural staircase, through which it would always be easy to enter Granite House.

"My friend," replied Harding, "if it is easy for us to reach our dwelling by this passage, it will be equally easy for others besides us. I mean, on the contrary, to block up that opening, to seal it hermetically, and, if it is necessary, to completely hide the entrance, by making a dam, and thus causing the water of the lake to rise."

"And how shall we get in?" asked the sailor.

"By an outside ladder," replied Cyrus Harding, "a rope ladder, which, once drawn up, will render access to our dwelling impossible."

"But why so many precautions?" asked Pencroft. "As yet we have seen no dangerous animals. As to our island being inhabited by natives, I don't believe it!"

"Are you quite sure of that Pencroft?" asked the engineer, looking at the sailor.

"Of course we shall not be quite sure, till we have explored it in every direction," replied Pencroft.

"Yes," said Harding, "for we know only a small portion of it as yet. But at any rate, if we have no enemies in the interior, they may come from the exterior, for parts of the Pacific are very dangerous. We must be provided against every contingency."

Cyrus Harding spoke wisely; and without making any further objection, Pencroft prepared to execute his orders.

The front of Granite House was then to be lighted by five windows and a door, besides a large bay window and some smaller oval ones, which would admit plenty of light to enter into the marvellous nave which was to be their chief room. This façade, situated at a height of eighty feet above the ground, was exposed to the east, and the rising sun saluted it with his first rays. It was found to be just at that part of the cliff which was between the projection at the mouth of the Mercy, and a perpendicular line traced above the heap of rocks which formed the Chimneys. Thus the winds from the north-east would only strike it obliquely, for it was protected by the projection. Besides, until the window-frames were made, the engineer meant to close the openings with thick shutters,

which would prevent either wind or rain from entering, and which could be concealed in need.

The first work was to make the openings. This would have taken too long with the pickaxe alone, and it is known that Harding was an ingenious man. He had still a quantity of nitro-glycerine at his disposal, and he employed it usefully. By means of this explosive substance the rock was broken open at the very places chosen by the engineer. Then, with the pickaxe and spade, the windows and doors were properly shaped, the jagged edges were smoothed off, and a few days after the beginning of the work, Granite House was abundantly lighted by the rising sun, whose rays penetrated into its most secret recesses. Following the plan proposed by Cyrus Harding, the space was to be divided into five compartments looking out on the sea ; to the right, an entry with a door, which would meet the ladder ; then a kitchen, thirty feet long ; a dining-room, measuring forty feet ; a sleeping-room, of equal size ; and lastly, a "Visitor's room," petitioned for by Pencroft, and which was next to the great hall. These rooms, or rather this suite of rooms, would not occupy all the depth of the cave. There would be also a corridor and a storehouse, in which their tools, provisions, and stores would be kept. All the productions of the island, the flora as well as the fauna, were to be there in the best possible state of preservation, and completely sheltered

from the damp. There was no want of space, so that each object could be methodically arranged. Besides, the colonists had still at their disposal the little grotto above the great cavern, which was like the garret of the new dwelling.

This plan settled, it had only to be put into execution. The miners became brick-makers again, then the bricks were brought to the foot of Granite House. Till then, Harding and his companions had only entered the cavern by the long passage. This mode of communication obliged them first to climb Prospect Heights, making a détour by the river's bank, and then to descend two hundred feet through the passage, having to climb as far when they wished to return to the plateau. This was a great loss of time, and was also very fatiguing. Cyrus Harding, therefore, resolved to proceed without any further delay to the fabrication of a strong rope ladder, which, once raised, would render Granite House completely inaccessible.

This ladder was manufactured with extreme care, and its uprights, formed of the twisted fibres of a species of cane, had the strength of a thick cable. As to the rounds, they were made of a sort of red cedar, with light, strong branches; and this apparatus was wrought by the masterly hand of Pencroft.

Other ropes were made with vegetable fibres, and a sort of crane with a tackle was fixed at the door. In this way

bricks could easily be raised into Granite House. The transport of the materials being thus simplified, the arrangement of the interior could begin immediately. There was no want of lime, and some thousands of bricks were there ready to be used. The framework of the partitions was soon raised, very roughly at first, and in a short time, the cave was divided into rooms and storehouses, according to the plan agreed upon.

These different works progressed rapidly under the direction of the engineer, who himself handled the hammer and the trowel. No labour came amiss to Cyrus Harding, who thus set an example to his intelligent and zealous companions. They worked with confidence, even gaily, Pencroft always having some joke to crack, sometimes carpenter, sometimes ropemaker, sometimes mason, while he communicated his good humour to all the members of their little world. His faith in the engineer was complete; nothing could disturb it. He believed him capable of undertaking anything and succeeding in everything. The question of boots and clothes—assuredly a serious question,—that of light during the winter months, utilizing the fertile parts of the island, transforming the wild flora into cultivated flora, it all appeared easy to him; Cyrus Harding helping, everything would be done in time. He dreamt of canals, facilitating the transport of the riches of the ground; workings of quarries and mines; machines

for every industrial manufacture ; railroads ; yes, railroads ! of which a net-work would certainly one day cover Lincoln Island.

The engineer let Pencroft talk. He did not put down the aspirations of this brave heart. He knew how communicable confidence is ; he even smiled to hear him speak, and said nothing of the uneasiness for the future which he felt. In fact, in that part of the Pacific, out of the course of vessels, it was to be feared that no help would ever come to them. It was on themselves, on themselves alone, that the settlers must depend, for the distance of Lincoln Island from all other land was such, that to hazard themselves in a boat, of a necessarily inferior construction, would be a serious and perilous thing.

"But," as the sailor said, "they quite took the wind out of the sails of the Robinsons, for whom everything was done by a miracle."

In fact, they were energetic ; an energetic man will succeed where an indolent one would vegetate and inevitably perish.

Herbert distinguished himself in these works. He was intelligent and active ; understanding quickly, he performed well ; and Cyrus Harding became more and more attached to the boy. Herbert had a lively and reverent love for the engineer. Pencroft saw the close sympathy

which existed between the two, but he was not in the least jealous. Neb was Neb: he was what he would be always, courage, zeal, devotion, self-denial personified. He had the same faith in his master that Pencroft had, but he showed it less vehemently. When the sailor was enthusiastic, Neb always looked as if he would say, "Nothing could be more natural." Pencroft and he were great friends.

As to Gideon Spilett, he took his part in the common work, and was not less skilful in it than his companions, which always rather astonished the sailor. A "journalist," clever, not only in understanding, but in performing everything.

The ladder was finally fixed on the 28th of May. There were not less than a hundred rounds in this perpendicular height of eighty feet. Harding had been able, fortunately, to divide it in two parts, profiting by an overhanging of the cliff which made a projection forty feet above the ground. This projection, carefully levelled by the pickaxe, made a sort of platform, to which they fixed the first ladder, of which the oscillation was thus diminished one half, and a rope permitted it to be raised to the level of Granite House. As to the second ladder, it was secured both at its lower part, which rested on the projection, and at its upper end, which was fastened to the door. In short the ascent had been made much easier. Besides, Cyrus

Harding hoped later to establish an hydraulic apparatus, which would avoid all fatigue and loss of time, for the inhabitants of Granite House.

The settlers soon became habituated to the use of this ladder. They were light and active, and Pencroft, as a sailor, accustomed to run up the masts and shrouds, was able to give them lessons. But it was also necessary to give them to Top. The poor dog, with his four paws, was not formed for this sort of exercise. But Pencroft was such a zealous master, that Top ended by properly performing his ascents, and soon mounted the ladder as readily as his brethren in the circus. It need not be said that the sailor was proud of his pupil. However, more than once Pencroft hoisted him on his back, which Top never complained of.

It must be mentioned here, that during these works, which were actively conducted, for the bad season was approaching, the alimentary question was not neglected. Every day, the reporter and Herbert, who had been voted purveyors to the colony, devoted some hours to the chase. As yet, they only hunted in Jacamar wood, on the left of the river, because, for want of a bridge or boat, the Mercy had not yet been crossed. All the immense woods, to which the name of the Forests of the Far West had been given, were not explored. They reserved this important excursion for the first fine days of the next spring. But

Jacamar wood was full of game; kangaroos and boars abounded, and the hunters' iron-tipped spears and bows and arrows did wonders. Besides, Herbert discovered towards the south-west point of the lagoon a natural warren, a slightly damp meadow, covered with willows and aromatic herbs which scented the air, such as thyme, basil, savory, all the sweet-scented species of the labiated plants, which the rabbits appeared to be particularly fond of.

On the reporter observing that since the table was spread for the rabbits, it was strange that the rabbits themselves should be wanting, the two sportsmen carefully explored the warren. At any rate, it produced an abundance of useful plants, and a naturalist would have had a good opportunity of studying many specimens of the vegetable kingdom. Herbert gathered several shoots of the basil, rosemary, balm, betony, &c., which possess different medicinal properties, some pectoral, astringent, febrifuge, others anti-spasmodic, or anti-rheumatic. When, afterwards, Pencroft asked the use of this collection of herbs,—

“For medicine,” replied the lad, “to treat us when we are ill.”

“Why should we be ill, since there are no doctors in the island?” asked Pencroft quite seriously.

There was no reply to be made to that, but the lad went

on with his collection all the same, and it was well received at Granite House. Besides these medicinal herbs, he added a plant known in North America as "Oswego tea," which made an excellent beverage.

At last, by searching thoroughly, the hunters arrived at the real site of the warren. There the ground was perforated like a sieve.

"Here are the burrows!" cried Herbert.

"Yes," replied the reporter, "so I see."

"But are they inhabited?"

"That is the question."

This was soon answered. Almost immediately, hundreds of little animals, similar to rabbits, fled in every direction, with such rapidity that even Top could not overtake them. Hunters and dog ran in vain, these rodents escaped them easily. But the reporter resolved not to leave the place, until he had captured at least half-a-dozen of the quadrupeds. He wished to stock their larder first, and domesticate those which they might take later. It would not have been difficult to do this, with a few snares stretched at the openings of the burrows. But at this moment they had neither snares, nor anything to make them of. They must, therefore, be satisfied with visiting each hole, and rummaging in it with a stick, hoping by dint of patience to do what could not be done in any other way.

At last, after half an hour, four rodents were taken in their holes. They were similar to their European brethren, and are commonly known by the name of American rabbits.

This produce of the chase was brought back to Granite House, and figured at the evening repast. The tenants of the warren were not at all to be despised, for they were delicious. It was a valuable resource of the colony, and it appeared to be inexhaustible.

On the 31st of May the partitions were finished. The rooms had now only to be furnished, and this would be work for the long winter days. A chimney was established in the first room, which served as a kitchen. The pipe destined to conduct the smoke outside gave some trouble to these amateur bricklayers. It appeared simplest to Harding to make it of brick clay; as creating an outlet for it to the upper plateau was not to be thought of, a hole was pierced in the granite above the window of the kitchen, and the pipe met it like that of an iron stove. Perhaps the winds which blew directly against the façade would make the chimney smoke, but these winds were rare, and besides, Master Neb, the cook, was not so very particular about that.

When these interior arrangements were finished, the engineer occupied himself in blocking up the outlet by the lake, so as to prevent any access by that way. Masses of
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rock were rolled to the entrance and strongly cemented together. Cyrus Harding did not yet realize his plan of drowning this opening under the waters of the lake, by restoring them to their former level by means of a dam. He contented himself with hiding the obstruction with grass and shrubs, which were planted in the interstices of the rocks, and which next spring would sprout thickly. However, he used the waterfall so as to lead a small stream of fresh water to the new dwelling. A little trench, made below their level, produced this result ; and this derivation from a pure and inexhaustible source yielded twenty-five or thirty gallons a day. There would never be any want of water at Granite House. At last all was finished, and it was time, for the bad season was near. Thick shutters closed the windows of the façade, until the engineer had time to make glass.

Gideon Spilett had very artistically arranged on the rocky projections around the windows plants of different kinds, as well as long streaming grass, so that the openings were picturesquely framed in green, which had a pleasing effect.

The inhabitants of this solid, healthy, and secure dwelling, could not but be charmed with their work. The view from the windows extended over a boundless horizon, which was closed by the two Mandible Capes on the north, and Claw Cape on the south. All Union Bay was spread

before them. Yes, our brave settlers had reason to be satisfied, and Pencroft was lavish in his praise of what he humorously called, "his apartments on the fifth floor above the ground!"

CHAPTER XX.

THE RAINY SEASON—THE QUESTION OF CLOTHES—A SEAL HUNT—MANUFACTURING CANDLES—WORK IN GRANITE HOUSE—THE TWO BRIDGES—RETURN FROM A VISIT TO THE OYSTER BED—WHAT HERBERT FINDS IN HIS POCKET.

THE winter season set in with the month of June, which corresponds with the month of December in the northern hemisphere. It began with showers and squalls, which succeeded each other without intermission. The tenants of Granite House could appreciate the advantages of a dwelling which sheltered them from the inclement weather. The Chimneys would have been quite insufficient to protect them against the rigour of winter, and it was to be feared that the high tides would make another irruption. Cyrus Harding had taken precautions against this contingency, so as to preserve as much as possible the forge and furnace which were established there.

During the whole of the month of June the time was employed in different occupations, which excluded neither hunting nor fishing, the larder being therefore abundantly supplied. Pencroft, so soon as he had leisure, proposed to set some traps, from which he expected great results. He soon made some snares with creepers, by the aid of which the warren henceforth every day furnished its quota of rodents. Neb employed nearly all his time in salting or smoking meat, which insured their always having plenty of provisions. The question of clothes was now seriously discussed, the settlers having no other garments than those they wore when the balloon threw them on the island. These clothes were warm and good ; they had taken great care of them as well as of their linen, and they were perfectly whole, but they would soon need to be replaced. Moreover, if the winter was severe, the settlers would suffer greatly from cold.

On this subject the ingenuity of Harding was at fault. They must provide for their most pressing wants, settle their dwelling, and lay in a store of food ; thus the cold might come upon them before the question of clothes had been settled. They must therefore make up their minds to pass this first winter without additional clothing. When the fine season came round again, they would regularly hunt those musmons which had been seen on the expedition to Mount Franklin, and the wool once collected, the

engineer would know how to make it into strong warm stuff. . . . How? he would consider.

"Well, we are free to roast ourselves at Granite House!" said Pencroft. "There are heaps of fuel, and no reason for sparing it."

"Besides," added Gideon Spilett, "Lincoln Island is not situated under a very high latitude, and probably the winters here are not severe. Did you not say, Cyrus, that this thirty-fifth parallel corresponded to that of Spain in the other hemisphere?"

"Doubtless," replied the engineer, "but some winters in Spain are very cold! No want of snow and ice; and perhaps Lincoln Island is just as rigorously tried. However, it is an island, and as such, I hope that the temperature will be more moderate."

"Why, captain?" asked Herbert.

"Because the sea, my boy, may be considered as an immense reservoir, in which is stored the heat of the summer. When winter comes, it restores this heat, which insures for the regions near the ocean a medium temperature, less high in summer, but less low in winter."

"We shall prove that," replied Pencroft. "But I don't want to bother myself about whether it will be cold or not. One thing is certain, that is that the days are already short, and the evenings long. Suppose we talk about the question of light."

"Nothing is easier," replied Harding.

"To talk about?" asked the sailor.

"To settle."

"And when shall we begin?"

"To-morrow, by having a seal hunt."

"To make candles?"

"Yes."

Such was the engineer's project; and it was quite feasible, since he had lime and sulphuric acid, while the amphibians of the islet would furnish the fat necessary for the manufacture.

They were now at the 4th of June. It was Whit Sunday, and they agreed to observe this feast. All work was suspended, and prayers were offered to Heaven. But these prayers were now thanksgivings. The settlers in Lincoln Island were no longer the miserable castaways thrown on the islet. They asked for nothing more—they gave thanks. The next day, the 5th of June, in rather uncertain weather, they set out for the islet. They had to profit by the low tide to cross the Channel, and it was agreed that they would construct, for this purpose, as well as they could, a boat which would render communication so much easier, and would also permit them to ascend the Mercy, at the time of their grand exploration of the south-west of the island, which was put off till the first fine days.

The seals were numerous, and the hunters, armed with

their iron-tipped spears, easily killed half-a-dozen. Neb and Pencroft skinned them, and only brought back to Granite House their fat and skin, this skin being intended for the manufacture of boots.

The result of the hunt was this: nearly three hundred pounds of fat, all to be employed in the fabrication of candles.

The operation was extremely simple, and if it did not yield absolutely perfect results, they were at least very useful. Cyrus Harding would only have had at his disposal sulphuric acid, but by heating this acid with the neutral fatty bodies, he could separate the glycerine; then from this new combination, he easily separated the olein, the margarin, and the stearin, by employing boiling water. But to simplify the operation, he preferred to saponify the fat by means of lime. By this he obtained a calcareous soap, easy to decompose by sulphuric acid, which precipitated the lime into the state of sulphate, and liberated the fatty acids.

From these three acids—oleic, margarin, and stearic—the first, being liquid, was driven out by a sufficient pressure. As to the two others, they formed the very substance of which the candles were to be moulded.

This operation did not last more than four and twenty hours. The wicks, after several trials, were made of vegetable fibres, and dipped in the liquified substance, they

formed regular stearic candles, moulded by the hand, which only wanted whiteness and polish. They would not doubtless have the advantage of the wicks which are impregnated with boracic acid, and which vitrify as they burn and are entirely consumed, but Cyrus Harding having manufactured a beautiful pair of snuffers, these candles would be greatly appreciated during the long evenings in Granite House.

During this month there was no want of work in the interior of their new dwelling. The joiners had plenty to do. They improved their tools, which were very rough, and added others also.

Scissors were made among other things, and the settlers were at last able to cut their hair, and also to shave, or at least trim their beards. Herbert had none, Neb but little, but their companions were bristling in a way which justified the making of the said scissors.

The manufacture of a hand-saw cost infinite trouble, but at last an instrument was obtained which, when vigorously handled, could divide the ligneous fibres of the wood. They then made tables, seats, cupboards, to furnish the principal rooms, and bedsteads, of which all the bedding consisted of grass mattresses. The kitchen, with its shelves, on which rested the cooking utensils, its brick stove, looked very well, and Neb worked away there as earnestly as if he was in a chemist's laboratory.

But the joiners had soon to be replaced by carpenters.

In fact, the waterfall created by the explosion, rendered the construction of two bridges necessary, one on Prospect Heights, the other on the shore. Now the plateau and the shore were transversely divided by a watercourse, which had to be crossed to reach the northern part of the island. To avoid it the colonists had been obliged to make a considerable *détour*, by climbing up to the source of the Red Creek. The simplest thing was to establish on the plateau, and on the shore, two bridges from twenty to five and twenty feet in length. All the carpenter's work that was needed was to clear some trees of their branches: this was a business of some days. Directly the bridges were established, Neb and Pencroft profited by them to go to the oyster-bed which had been discovered near the downs. They dragged with them a sort of rough cart, which replaced the former inconvenient hurdle, and brought back some thousands of oysters, which soon increased among the rocks and formed a bed at the mouth of the Mercy. These molluscs were of excellent quality, and the colonists consumed some daily.

It has been seen that Lincoln Island, although its inhabitants had as yet only explored a small portion of it, already contributed to almost all their wants. It was probable that if they hunted into its most secret recesses, in all the wooded part between the Mercy and Reptile Point, they would find new treasures.

The settlers in Lincoln Island had still one privation. There was no want of meat, nor of vegetable products; those ligneous roots which they had found, when subjected to fermentation, gave them an acid drink, which was preferable to cold water; they also made sugar, without canes or beetroots, by collecting the liquor which distils from the "*acer saccharinum*," a sort of maple-tree, which flourishes in all the temperate zones, and of which the island possessed a great number; they made a very agreeable tea by employing the herbs brought from the warren; lastly, they had an abundance of salt, the only mineral which is used in food, . . . : but bread was wanting.

Perhaps in time the settlers could replace this want by some equivalent, it was possible that they might find the sago or the bread-fruit tree amongst the forests or the south, but they had not as yet met with these precious trees. However, Providence came directly to their aid, in an infinitesimal proportion it is true, but Cyrus Harding, with all his intelligence, all his ingenuity, would never have been able to produce that which, by the greatest chance, Herbert one day found in the lining of his waistcoat, which he was occupied in setting to rights.

On this day, as it was raining in torrents, the settlers were assembled in the great hall in Granite House, when the lad cried out all at once,—

"Look here, captain—a grain of corn!"

And he showed his companions a grain—a single grain—which from a hole in his pocket had got into the lining of his waistcoat.

The presence of this grain was explained by the fact that Herbert, when at Richmond, used to feed some pigeons, of which Pencroft had made him a present.

“A grain of corn?” said the engineer quickly.

“Yes, captain; but one, only one!”

“Well, my boy,” said Pencroft, laughing, “we’re getting on capitally, upon my word! What shall we make with one grain of corn?”

“We will make bread of it,” replied Cyrus Harding.

“Bread, cakes, tarts!” replied the sailor. “Come, the bread that this grain of corn will make won’t choke us very soon!”

Herbert, not attaching much importance to his discovery, was going to throw away the grain in question; but Harding took it, examined it, found that it was in good condition, and looking the sailor full in the face—“Pencroft,” he asked quietly, “do you know how many ears one grain of corn can produce?”

“One, I suppose!” replied the sailor, surprised at the question.

“Ten, Pencroft! And do you know how many grains one ear bears?”

“No, upon my word.”

"About eighty!" said Cyrus Harding. "Then, if we plant this grain, at the first crop we shall reap eight hundred grains, which at the second will produce six hundred and forty thousand; at the third, five hundred and twelve millions; at the fourth, more than four hundred thousands of millions! There is the proportion."

Harding's companions listened without answering. These numbers astonished them. They were exact, however.

"Yes, my friends," continued the engineer, "such are the arithmetical progressions of prolific nature; and yet what is this multiplication of the grain of corn, of which the ear only bears eight hundred grains, compared to the poppy-plant, which bears thirty-two thousand seeds; to the tobacco-plant, which produces three hundred and sixty thousand? In a few years, without the numerous causes of destruction which arrest their fecundity, these plants would overrun the earth."

But the engineer had not finished his lecture.

"And now, Pencroft," he continued, "do you know how many bushels four hundred thousand millions of grains would make?"

"No," replied the sailor; "but what I do know is, that I am nothing better than a fool!"

"Well, they would make more than three millions, at a hundred and thirty thousand a bushel, Pencroft."

"Three millions!" cried Pencroft.

"Three millions."

"In four years?"

"In four years," replied Cyrus Harding, "and even in two years, if, as I hope, in this latitude we can obtain two crops a year."

At that, according to his usual custom, Pencroft could not reply otherwise than by a tremendous hurrah.

"So, Herbert," added the engineer, "you have made a discovery of great importance to us. Everything, my friends, everything can serve us in the condition in which we are. Do not forget that, I beg of you."

"No, captain, no, we shan't forget it," replied Pencroft; "and if ever I find one of those tobacco-seeds, which multiply by three hundred and sixty thousand, I assure you I won't throw it away! And now, what must we do?"

"We must plant this grain," replied Herbert.

"Yes," added Gideon Spilett, "and with every possible care, for it bears in itself our future harvests."

"Provided it grows!" cried the sailor.

"It will grow," replied Cyrus Harding.

This was the 20th of June. The time was then propitious for sowing this single precious grain of corn. It was first proposed to plant it in a pot, but upon reflection it was decided to leave it to nature, and confide it to the earth. This was done that very day, and it is needless to

add, that every precaution was taken that the experiment might succeed.

The weather having cleared, the settlers climbed the height above Granite House. There, on the plateau, they chose a spot, well sheltered from the wind, and exposed to all the heat of the mid-day sun. The place was cleared, carefully weeded, and searched for insects and worms; then a bed of good earth, improved with a little lime, was made; it was surrounded by a railing; and the grain was buried in the damp earth.

Did it not seem as if the settlers were laying the first stone of some edifice? It recalled to Pencroft the day on which he lighted his only match, and all the anxiety of the operation. But this time the thing was more serious. In fact, the castaways would have been always able to procure fire, in some mode or other, but no human power could supply another grain of corn, if unfortunately this should be lost!

CHAPTER XXI.

SOME DEGREES BELOW ZERO—EXPLORING THE MARSHY PART TO THE SOUTH-EAST—THE WOLF-FOX—VIEW OF THE SEA—A CONVERSATION ON THE FUTURE OF THE PACIFIC OCEAN—THE INCESSANT WORK OF THE CORAL INSECTS—WHAT OUR GLOBE WILL BECOME—THE CHASE—TADORN'S FENS.

FROM this time Pencroft did not let a single day pass without going to visit what he gravely called his "corn-field." And woe to the insects which dared to venture there! No mercy was shown them.

Towards the end of the month of June, after incessant rain, the weather became decidedly colder, and on the 29th a Fahrenheit thermometer would certainly have announced only twenty degrees above zero, that is considerably below the freezing-point. The next day, the 30th of June, the day which corresponds to the 31st of December in the northern year, was a Friday. Neb remarked that the year finished on a bad day, but Pencroft replied that

naturally the next would begin on a good one, which was better.

At any rate it commenced by very severe cold. Ice accumulated at the mouth of the Mercy, and it was not long before the whole expanse of the lake was frozen.

The settlers had frequently been obliged to renew their store of wood. Pencroft also had wisely not waited till the river was frozen, but had brought enormous rafts of wood to their destination. The current was an indefatigable moving power, and it was employed in conveying the floating wood to the moment when the frost enchained it. To the fuel which was so abundantly supplied by the forest, they added several cartloads of coal, which had to be brought from the foot of the spurs of Mount Franklin. The powerful heat of the coal was greatly appreciated in the low temperature, which on the 4th of July fell to eight degrees of Fahrenheit, that is, thirteen degrees below zero. A second fireplace had been established in the dining-room, where they all worked together at their different avocations. During this period of cold, Cyrus Harding had great cause to congratulate himself on having brought to Granite House the little stream of water from Lake Grant. Taken below the frozen surface, and conducted through the passage, it preserved its fluidity, and arrived at an interior reservoir which had been hollowed out at the back part of the

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store-room, while the overflow ran through the well to the sea.

About this time, the weather being extremely dry, the colonists, clothed as warmly as possibly, resolved to devote a day to the exploration of that part of the island between the Mercy and Claw Cape. It was a wide extent of marshy land, and they would probably find good sport, for water-birds ought to swarm there.

They reckoned that it would be about eight or nine miles to go there, and as much to return, so that the whole of the day would be occupied. As an unknown part of the island was about to be explored, the whole colony took part in the expedition. Accordingly, on the 5th of July, at six o'clock in the morning, when day had scarcely broken, Cyrus Harding, Gideon Spilett, Herbert, Neb, and Pencroft, armed with spears, snares, bows and arrows, and provided with provisions, left Granite House, preceded by Top, who bounded before them.

Their shortest way was to cross the Mercy on the ice, which then covered it.

"But," as the engineer justly observed, "that could not take the place of a regular bridge!" So, the construction of a regular bridge was noted in the list of future works.

It was the first time that the settlers had set foot on the right bank of the Mercy, and ventured into the midst of

those gigantic and superb coniferæ now sprinkled over with snow.

But they had not gone half a mile when from a thicket a whole family of quadrupeds, who had made a home there, disturbed by Top, rushed forth into the open country.

"Ah! I should say those are foxes!" cried Herbert, when he saw the troop rapidly decamping.

They were foxes, but of a very large size, who uttered a sort of barking, at which Top seemed to be very much astonished, for he stopped short in the chase, and gave the swift animals time to disappear.

The dog had reason to be surprised, as he did not know Natural History. But, by their barking, these foxes, with reddish-grey hair, black tails terminating in a white tuft, had betrayed their origin. So Herbert was able, without hesitating, to give them their real name of "Arctic foxes." They are frequently met with in Chili, in the Falkland Islands, and in all parts of America traversed by the thirtieth and fortieth parallels. Herbert much regretted that Top had not been able to catch one of these carnivora.

"Are they good to eat?" asked Pencroft, who only regarded the representatives of the fauna in the island from one special point of view.

"No," replied Herbert; "but zoologists have not yet found out if the eye of these foxes is diurnal or nocturnal,

or whether it is correct to class them in the genus dog, properly so called."

Harding could not help smiling on hearing the lad's reflection, which showed a thoughtful mind. As to the sailor, from the moment when he found that the foxes were not classed in the genus eatable, they were nothing to him. However, when a poultry-yard was established at Granite House, he observed that it would be best to take some precautions against a probable visit from these four-legged plunderers, and no one disputed this.

After having turned the point, the settlers saw a long beach washed by the open sea. It was then eight o'clock in the morning. The sky was very clear, as it often is after prolonged cold; but warmed by their walk, neither Harding nor his companions felt the sharpness of the atmosphere too severely. Besides there was no wind, which made it much more bearable. A brilliant sun, but without any calorific action, was just issuing from the ocean. The sea was as tranquil and blue as that of a Mediterranean gulf, when the sky is clear. Claw Cape, bent in the form of a yataghan, tapered away nearly four miles to the south-east. To the left the edge of the marsh was abruptly ended by a little point. Certainly, in this part of Union Bay, which nothing sheltered from the open sea, not even a sand-bank, ships beaten by the east winds would have found no shelter. They perceived by the tranquillity of the sea, in

which no shallows troubled the waters, by its uniform colour, which was stained by no yellow shades, by the absence of even a reef, that the coast was steep and that the ocean there covered a deep abyss. Behind in the west, but at a distance of four miles, rose the first trees of the forests of the Far West. They might have believed themselves to be on the desolate coast of some island in the Antarctic regions which the ice had invaded. The colonists halted at this place for breakfast. A fire of brushwood and dried seaweed was lighted, and Neb prepared the breakfast of cold meat, to which he added some cups of Oswego tea.

Whilst eating they looked around them. This part of Lincoln Island was very sterile, and contrasted with all the western part. The reporter was thus led to observe that if chance had thrown them at first on the shore, they would have had but a deplorable idea of their future domain.

"I believe that we should not have been able to reach it," replied the engineer, "for the sea is deep, and there is not a rock on which we could have taken refuge. Before Granite House, at least, there were sandbanks, an islet, which multiplied our chances of safety. Here, nothing but the depths!"

"It is singular enough," remarked Spilett, "that this comparatively small island should present such varied

ground. This diversity of aspect, logically only belongs to continents of a certain extent. One would really say, that the western part of Lincoln Island, so rich and so fertile, is washed by the warm waters of the Gulf of Mexico, and that its shores to the north and the south-east extend over a sort of Arctic sea.

"You are right, my dear Spilett," replied Cyrus Harding, "I have also observed this. I think the form and also the nature of this island strange. It is a summary of all the aspects which a continent presents, and I should not be surprised if it was a continent formerly."

"What! a continent in the middle of the Pacific?" cried Pencroft.

"Why not?" replied Cyrus Harding. "Why should not Australia, New Ireland, Australasia, united to the archipelagos of the Pacific, have once formed a sixth part of the world, as important as Europe or Asia, as Africa or the two Americas? To my mind, it is quite possible that all these islands, emerging from this vast ocean, are but the summits of a continent, now submerged, but which was above the waters at an ante-historic period."

"As the Atlantis was formerly," replied Herbert.

"Yes, my boy . . . if, however, it has existed."

"And would Lincoln Island have been a part of that continent?" asked Pencroft.

"It is probable," replied Cyrus Harding, "and that

would sufficiently explain the variety of productions which are seen on its surface."

"And the great number of animals which still inhabit it," added Herbert.

"Yes, my boy," replied the engineer, "and you furnish me with an argument to support my theory. It is certain, after what we have seen, that animals are numerous in this island, and what is more strange, that the species are extremely varied. There is a reason for that, and to me it is that Lincoln Island may have formerly been a part of some vast continent which has gradually sunk below the Pacific."

"Then, some fine day," said Pencroft, who did not appear to be entirely convinced, "the rest of this ancient continent may disappear in its turn, and there will be nothing between America and Asia."

"Yes," replied Harding, "there will be new continents which millions and millions of animalculæ are building at this moment."

"And what are these masons?" asked Pencroft.

"Coral insects," replied Cyrus Harding. "By constant work they made the island of Clermont-Tonnerre, and numerous other coral-islands in the Pacific Ocean. Forty-seven millions of these insects are needed to weigh a grain, and yet, with the sea-salt they absorb, the solid elements of water which they assimilate, these animalculæ produce

limestone, and this limestone forms enormous submarine erections, of which the hardness and solidity equal granite. Formerly, at the first periods of creation, nature employing fire, heaved up the land, but now she entrusts to these microscopic creatures the task of replacing this agent, of which the dynamic power in the interior of the globe has evidently diminished--which is proved by the number of volcanoes on the surface of the earth, now actually extinct. And I believe that centuries succeeding to centuries, and insects to insects, this Pacific may one day be changed into a vast continent, which new generations will inhabit and civilize in their turn."

"That will take a long time," said Pencroft.

"Nature has time for it," replied the engineer

"But what would be the use of new continents?" asked Herbert. "It appears to me that the present extent of habitable countries is sufficient for humanity. Yet nature does nothing uselessly."

"Nothing uselessly, certainly," replied the engineer, "but this is how the necessity of new continents for the future, and exactly on the tropical zone occupied by the coral islands, may be explained. At least to me this explanation appears plausible."

"We are listening, captain," said Herbert.

"This is my idea; philosophers generally admit that some day our globe will end, or rather that animal and

vegetable life will no longer be possible, because of the intense cold to which it will be subjected. What they are not agreed upon, is the cause of this cold. Some think that it will arise from the falling of the temperature, which the sun will experience after millions of years; others, from the gradual extinction of the fires in the interior of our globe, which have a greater influence on it than is generally supposed. I hold to this last hypothesis, grounding it on the fact that the moon is really a cold star, which is no longer habitable, although the sun continues to throw on its surface the same amount of heat. If, then, the moon has become cold, it is because the interior fires to which, as do all the stars of the stellar world, it owes its origin, are completely extinct. Lastly, whatever may be the cause, our globe will become cold some day, but this cold will only operate gradually. What will happen, then? The temperate zones, at a more or less distant period, will not be more habitable than the polar regions now are. Then the population of men, as well as the animals, will flow towards the latitudes which are more directly under the solar influence. An immense emigration will be performed. Europe, Central Asia, North America, will gradually be abandoned, as well as Australasia and the lower parts of South America. The vegetation will follow the human emigration. The flora will retreat towards the Equator at the same time as the

fauna. The central parts of South America and Africa will be the continents chiefly inhabited. The Laplanders and the Samoides will find the climate of the polar regions on the shores of the Mediterranean. Who can say, that at this period, the equatorial regions will not be too small, to contain and nourish terrestrial humanity? Now, may not provident nature, so as to give refuge to all the vegetable and animal emigration, be at present laying the foundation of a new continent under the Equator, and may she not have entrusted these insects with the construction of it? I have often thought of all these things, my friends, and I seriously believe that the aspect of our globe will some day be completely changed; that by the raising of new continents the sea will cover the old, and that, in future ages, a Columbus will go to discover the islands of Chimborazo, of the Himalaya, or of Mont Blanc, remains of a submerged America, Asia, and Europe. Then these new continents will become, in their turn, uninhabitable; heat will die away, as does the heat from a body when the soul has left it; and life will disappear from the globe, if not for ever, at least for a period. Perhaps then, our spheroid will rest—will be left to death—to revive some day under superior conditions! But all that, my friends, is the secret of the Author of all things; and beginning by the work of the insects, I have perhaps let myself be carried too far, in investigating the secrets of the future."

"My dear Cyrus," replied Spilett, "these theories are prophecies to me, and they will be accomplished some day."

"That is the secret of God," said the engineer.

"All that is well and good," then said Pencroft, who had listened with all his might, "but will you tell me, captain, if Lincoln Island has been made by your insects?"

"No," replied Harding; "it is of a purely volcanic origin."

"Then it will disappear some day?"

"That is probable."

"I hope we won't be here then."

"No, don't be uneasy, Pencroft; we shall not be here then, as we have no wish to die here, and hope to get away some time."

"In the meantime," replied Gideon Spilett, "let us establish ourselves here as if for ever. There is no use in doing things by halves."

This ended the conversation. Breakfast was finished, the exploration was continued, and the settlers arrived at the border of the marshy region. It was a marsh of which the extent, to the rounded coast which terminated the island at the south-east, was about twenty square miles. The soil was formed of clayey flint-earth, mingled with vegetable matter, such as the remains of rushes, reeds, grass, &c. Here and there beds of grass, thick as a carpet,

covered it. In many places icy pools sparkled in the sun. Neither rain nor any river, increased by a sudden swelling, could supply these ponds. They therefore naturally concluded that the marsh was fed by the infiltrations of the soil, and it was really so. It was also to be feared that during the heat miasmas would arise, which might produce fevers.

Above the aquatic plants, on the surface of the stagnant water, fluttered numbers of birds. Wild duck, teal, snipe lived there in flocks, and those fearless birds allowed themselves to be easily approached.

One shot from a gun would certainly have brought down some dozen of the birds, they were so close together. The explorers were, however, obliged to content themselves with bows and arrows. The result was less, but the silent arrow had the advantage of not frightening the birds, whilst the noise of fire-arms would have dispersed them to all parts of the marsh. The hunters were satisfied, for this time, with a dozen ducks, which had white bodies with a band of cinnamon, a green head, wings black, white, and red, and flattened beak. Herbert called them tadorns. Top helped in the capture of these birds, whose name was given to this marshy part of the island. The settlers had here an abundant reserve of aquatic game. At some future time they meant to explore it more carefully, and it was probable that some of the birds there might be domes-

ticated, or at least brought to the shores of the lake, so that they would be more within their reach.

About five o'clock in the evening Cyrus Harding and his companions retraced their steps to their dwelling by traversing Tador's Fens, and crossed the Mercy on the ice-bridge.

At eight in the evening they all entered Granite House.

CHAPTER XXII.

TRAPS—FOXES—PECCARIES—THE WIND CHANGES TO
THE NORTH-WEST—SNOW-STORM—BASKET-MAKERS
—THE SEVEREST COLD—MAPLE SUGAR—THE MYST-
ERIOUS WELL—AN EXPLORATION PLANNED—THE
LEADEN BULLET.

THIS intense cold lasted till the 15th of August, without, however, passing the degree of Fahrenheit already mentioned. When the atmosphere was calm, the low temperature was easily borne, but when the wind blew, the poor settlers, insufficiently clothed, felt it severely. Pencroft regretted that Lincoln Island was not the home of a few families of bears rather than of so many foxes and seals.

"Bears," said he, "are generally very well dressed, and I ask no more than to borrow for the winter the warm cloaks which they have on their backs."

"But," replied Neb, laughing, "perhaps the bears would not consent to give you their cloaks, Pencroft. These beasts are not St. Martins."

"We would make them do it, Neb, we would make them," replied Pencroft, in quite an authoritative tone.

But these formidable carnivora did not exist in the island, or at any rate they had not as yet shown themselves.

In the meanwhile, Herbert, Pencroft, and the reporter, occupied themselves with making traps on Prospect Heights and at the border of the forest.

According to the sailor, any animal, whatever it was, would be a lawful prize, and the rodents or carnivora which might get into the new snares would be well received at Granite House.

The traps were besides extremely simple; being pits dug in the ground, a platform of branches and grass above, which concealed the opening, and at the bottom some bait, the scent of which would attract animals. It must be mentioned also, that they had not been dug at random, but at certain places where numerous footprints showed that quadrupeds frequented the ground. They were visited every day, and at three different times, during the first days, specimens of those Antarctic foxes which they had already seen on the right bank of the Mercy were found in them.

"Why, there are nothing but foxes in this country!" cried Pencroft, when for the third time he drew one of the animals out of the pit. Looking at it in great disgust, he added, "beasts which are good for nothing!"

"Yes," said Gideon Spilett, "they are good for something!"

"And what is that?"

"To make bait to attract other creatures!"

The reporter was right, and the traps were henceforward baited with the foxes' carcasses.

The sailor had also made snares from the long tough fibres of a certain plant, and they were even more successful than the traps. Rarely a day passed without some rabbits from the warren being caught. It was always rabbit, but Neb knew how to vary his sauces, and the settlers did not think of complaining.

However, once or twice in the second week of August, the traps supplied the hunters with other animals more useful than foxes, namely, several of those small wild boars which had already been seen to the north of the lake. Pencroft had no need to ask if these beasts were eatable. He could see that by their resemblance to the pig of America and Europe.

"But these are not pigs," said Herbert to him, "I warn you of that, Pencroft."

"My boy," replied the sailor, bending over the trap and drawing out one of these representatives of the family of *sus* by the little appendage which served it as a tail. "Let me believe that these are pigs!"

"Why?"

"Because that pleases me!"

"Are you very fond of pig then, Pencroft?"

"I am very fond of pig," replied the sailor, "particularly of its feet, and if it had eight instead of four, I should like it twice as much!"

As to the animals in question, they were peccaries belonging to one of the four species which are included in the family, and they were also of the species of Tajacu, recognizable by their deep colour and the absence of those long teeth with which the mouths of their congeners are armed. These peccaries generally live in herds, and it was probable that they abounded in the woody parts of the island.

At any rate, they were eatable from head to foot, and Pencroft did not ask more from them.

Towards the 15th of August, the state of the atmosphere was suddenly moderated by the wind shifting to the north-west. The temperature rose some degrees, and the accumulated vapour in the air was not long in resolving into snow. All the island was covered with a sheet of white, and showed itself to its inhabitants under a new aspect. The snow fell abundantly for several days, and it soon reached a thickness of two feet.

The wind also blew with great violence, and at the height of Granite House the sea could be heard thundering against the reefs. In some places, the wind, eddying

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round the corners, formed the snow into tall whirling columns, resembling those waterspouts which turn round on their base, and which vessels attack with a shot from a gun. However, the storm, coming from the north-west, blew across the island, and the position of Granite House preserved it from a direct attack.

But in the midst of this snow-storm, as terrible as if it had been produced in some polar country, neither Cyrus Harding nor his companions could, notwithstanding their wish for it, venture forth, and they remained shut up for five days, from the 20th to the 25th of August. They could hear the tempest raging in the Jacamar woods, which would surely suffer from it. Many of the trees would no doubt be torn up by the roots, but Pencroft consoled himself by thinking that he would not have the trouble of cutting them down.

"The wind is turning woodman, let it alone," he repeated.

Besides, there was no way of stopping it, if they had wished to do so.

How grateful the inhabitants of Granite House then were to Heaven for having prepared for them this solid and immoveable retreat! Cyrus Harding had also his legitimate share of thanks, but after all, it was Nature who had hollowed out this vast cavern, and he had only discovered it. There all were in safety, and the tempest could not reach them. If they had constructed a house of

bricks and wood on Prospect Heights, it certainly would not have resisted the fury of this storm. As to the Chimneys, it must have been absolutely uninhabitable, for the sea, passing over the islet, would beat furiously against it. But here, in Granite House, in the middle of a solid mass, over which neither the sea nor air had any influence, there was nothing to fear.

During these days of seclusion the settlers did not remain inactive.

There was no want of wood, cut up into planks, in the store-room, and little by little they completed their furnishing; constructing the most solid of tables and chairs, for material was not spared. Neb and Pencroft were very proud of this rather heavy furniture, which they would not have changed on any account.

Then the carpenters became basket-makers, and they did not succeed badly in this new manufacture. At the point of the lake which projected to the north, they had discovered an osier-bed in which grew a large number of purple osiers. Before the rainy season, Pencroft and Herbert had cut down these useful shrubs, and their branches, well prepared, could now be effectively employed. The first attempts were somewhat crude, but in consequence of the cleverness and intelligence of the workmen, by consulting, and recalling the models which they had seen, and by emulating each other, the possessions of the

colony were soon increased by several baskets of different sizes. The store-room was provided with them, and in special baskets Neb placed his collections of rhizomes, stone-pine almonds, &c.

During the last week of the month of August the weather moderated again. The temperature fell a little, and the tempest abated. The colonists sallied out directly. There was certainly two feet of snow on the shore, but they were able to walk without much difficulty on the hardened surface. Cyrus Harding and his companions climbed Prospect Heights.

What a change! The woods, which they had left green, especially in the part at which the firs predominated, had disappeared under a uniform colour. All was white, from the summit of Mount Franklin to the shore, the forests, the plains, the lake, the river. The waters of the Mercy flowed under a roof of ice, which, at each rising and ebbing of the tide, broke up with loud crashes. Numerous birds fluttered over the frozen surface of the lake. Ducks and snipe, teal and guillemots were assembled in thousands. The rocks among which the cascade flowed were bristling with icicles. One might have said that the water escaped by a monstrous gargoyle, ornamented as grotesquely as by an artist of the Renaissance. As to the damage caused by the storm in the forest, that could not as yet be ascertained, they must wait till the snowy covering was dissipated.

Gideon Spilett, Pencroft, and Herbert did not miss this opportunity of going to visit their traps. They did not find them easily, under the snow with which they were covered. They had also to be careful not to fall into one or other of them, which would have been both dangerous and humiliating; to be taken in their own snares! But happily they avoided this unpleasantness, and found their traps perfectly intact. No animal had fallen into them, and yet the footprints in the neighbourhood were very numerous, amongst others, certain very clear marks of claws. Herbert did not hesitate to affirm that some animal of the feline species had passed there, which justified the engineer's opinion that dangerous beasts existed in Lincoln Island. These animals doubtless generally lived in the forests of the Far West, but pressed by hunger, they had ventured as far as Prospect Heights. Perhaps they had smelt out the inhabitants of Granite House.

"Now, what are these feline creatures?" asked Pencroft.

"They are tigers," replied Herbert.

"I thought those beasts were only found in hot countries?"

"On the new continent," replied the lad, "they are found from Mexico to the Pampas of Buenos Ayres. Now, as Lincoln Island is nearly under the same latitude as the provinces of La Plata, it is not surprising that tigers are to be met with in it."

"Well, we must look out for them," replied Pencroft.

However, the snow soon disappeared, quickly dissolving under the influence of the rising temperature. Rain fell, and the sheet of white soon vanished. Notwithstanding the bad weather, the settlers renewed their stores of different things, stone-pine almonds, rhizomes, syrup from the maple-tree, for the vegetable part; rabbits from the warren, agouties, and kangaroos for the animal part. This necessitated several excursions into the forest, and they found that a great number of trees had been blown down by the last hurricane. Pencroft and Neb also pushed with the cart as far as the vein of coal, and brought back several tons of fuel. They saw in passing that the pottery kiln had been severely damaged by the wind, at least six feet of it having been blown off.

At the same time as the coal, the store of wood was renewed at Granite House, and they profited by the current of the Mercy having again become free, to float down several rafts. They could see that the cold period was not ended.

A visit was also paid to the Chimneys, and the settlers could not but congratulate themselves on not having been living there during the hurricane. The sea had left unquestionable traces of its ravages. Sweeping over the islet, it had furiously assailed the passages, half filling them with sand, while thick beds of sea-weed covered the

rocks. Whilst Neb, Herbert, and Pencroft hunted or collected wood, Cyrus Harding and Gideon Spilett busied themselves in putting the Chimneys to rights, and they found the forge and the bellows almost unhurt, protected as they had been from the first by the heaps of sand.

The store of fuel had not been made uselessly. The settlers had not done with the rigorous cold. It is known that, in the northern hemisphere, the month of February is principally distinguished by rapid fallings of the temperature. It is the same in the southern hemisphere, and the end of the month of August, which is the February of North America, does not escape this climateric law.

About the 25th, after another change from snow to rain, the wind shifted to the south-east, and the cold became, suddenly, very severe. According to the engineer's calculation, the mercurial column of a Fahrenheit thermometer would not have marked less than eight degrees below zero, and this intense cold, rendered still more painful by a sharp gale, lasted for several days. The colonists were again shut up in Granite House, and as it was necessary to hermetically seal all the openings of the façade, only leaving a narrow passage for renewing the air, the consumption of candles was considerable. To economize them, the cavern was often only lighted by the blazing hearths, on which fuel was not spared. Several times, one or other of the settlers descended to the beach in the midst

of ice which the waves heaped up at each tide, but they soon climbed up again to Granite House, and it was not without pain and difficulty that their hands could hold to the rounds of the ladder. In consequence of the intense cold, their fingers felt as if burnt when they touched the rounds. To occupy the leisure hours, which the tenants of Granite House now had at their disposal, Cyrus Harding undertook an operation which could be performed indoors.

We know that the settlers had no other sugar at their disposal than the liquid substance which they drew from the maple, by making deep incisions in the tree. They contented themselves with collecting this liquor in jars and employing it in this state for different culinary purposes, and the more so, as on growing old, this liquid began to become white and to be of a syrupy consistency.

But there was something better to be made of it, and one day Cyrus Harding announced to his companions that they were going to turn into refiners.

"Refiners!" replied Pencroft. "That is rather a warm trade, I think."

"Very warm," answered the engineer.

"Then it will be seasonable!" said the sailor.

This word refining need not awake in the mind thoughts of an elaborate manufactory with apparatus and numerous workmen. No! to crystallize this liquor, only an extremely

easy operation is required. Placed on the fire in large earthen pots, it was simply subjected to evaporation, and soon a scum arose to its surface. As soon as this began to thicken, Neb carefully removed it with a wooden spatula; this accelerated the evaporation, and at the same time prevented it from contracting an empyreumatic flavour.

After boiling for several hours on a hot fire, which did as much good to the operators as the substance operated upon, the latter was transformed into a thick syrup. This syrup was poured into clay moulds, previously fabricated in the kitchen stove, and to which they had given various shapes. The next day this syrup had become cold, and formed cakes and tablets. This was sugar of rather a reddish colour, but nearly transparent and of a delicious taste.

The cold continued to the middle of September, and the prisoners in Granite House began to find their captivity rather tedious. Nearly every day they attempted sorties which they could not prolong. They constantly worked at the improvement of their dwelling. They talked whilst working. Harding instructed his companions in many things, principally explaining to them the practical applications of science. The colonists had no library at their disposal; but the engineer was a book which was always at hand, always open at the page which one wanted, a

book which answered all their questions, and which they often consulted. The time thus passed away pleasantly these brave men not appearing to have any fears for the future.

However, all were anxious to see, if not the fine season, at least the cessation of the insupportable cold. If only they had been clothed in a way to meet it, how many excursions they would have attempted, either to the downs or to Tadorn's Fens! Game would have been easily approached, and the chase would certainly have been most productive. But Cyrus Harding considered it of importance that no one should injure his health, for he had need of all his hands, and his advice was followed.

But it must be said, that the one who was most impatient of this imprisonment, after Pencroft perhaps, was Top. The faithful dog found Granite House very narrow. He ran backwards and forwards from one room to another, showing in his way how weary he was of being shut up. Harding often remarked that when he approached the dark well which communicated with the sea, and of which the orifice opened at the back of the store-room, Top uttered singular growlings. He ran round and round this hole, which had been covered with a wooden lid. Sometimes even he tried to put his paws under the lid, as if he wished to raise it. He then yelped in a peculiar way, which showed at once anger and uneasiness.

The engineer observed this manœuvre several times.

What could there be in this abyss to make such an impression on the intelligent animal? The well led to the sea, that was certain. Could narrow passages spread from it through the foundations of the island? Did some marine monster come from time to time, to breathe at the bottom of this well? The engineer did not know what to think, and could not refrain from dreaming of many strange improbabilities. Accustomed to go far into the regions of scientific reality, he would not allow himself to be drawn into the regions of the strange and almost of the supernatural; but yet how to explain why Top, one of those sensible dogs who never waste their time in barking at the moon, should persist in trying with scent and hearing to fathom this abyss, if there was nothing there to cause his uneasiness? Top's conduct puzzled Cyrus Harding even more than he cared to acknowledge to himself.

At all events, the engineer only communicated his impressions to Gideon Spilett, for he thought it useless to explain to his companions the suspicions which arose from what perhaps was only Top's fancy.

At last the cold ceased. There had been rain, squalls mingled with snow, hailstorms, gusts of wind, but these inclemencies did not last. The ice melted, the snow disappeared; the shore, the plateau, the banks of the Mercy,

the forest, again became practicable. This return of spring delighted the tenants of Granite House, and they soon only passed in it the hours necessary for eating and sleeping.

They hunted much in the second part of September, which led Pencroft to again entreat for the fire-arms, which he asserted had been promised by Cyrus Harding. The latter, knowing well that without special tools it would be nearly impossible for him to manufacture a gun which would be of any use, still drew back and put off the operation to some future time, observing in his usual dry way, that Herbert and Spilett had become very skilful archers, so that many sorts of excellent animals, agouties, kangaroos, capyboras, pigeons, bustards, wild ducks, snipes, in short, game both with fur and feathers, fell victims to their arrows, and that, consequently, they could wait. But the obstinate sailor would listen to nothing of this, and he would give the engineer no peace till he promised to satisfy his desire. Gideon Spilett, however, supported Pencroft.

"If, which may be doubted," said he, "the island is inhabited by wild beasts, we must think how to fight with and exterminate them. A time may come when this will be our first duty."

But at this period, it was not the question of fire-arms

which occupied Harding, but that of clothes. Those which the settlers wore had passed this winter, but they would not last until next winter. Skins of carnivora or the wool of ruminants must be procured at any price, and since there were plenty of musmons, it was agreed to consult on the means of forming a flock which might be brought up for the use of the colony. An enclosure for the domestic animals, a poultry-yard for the birds, in a word to establish a sort of farm in the island, such were the two important projects for the fine season.

In consequence and in view of these future establishments, it became of much importance that they should penetrate into all the yet unknown parts of Lincoln Island, that is to say, through that thick forest which extended on the right bank of the Mercy, from its mouth to the extremity of the Serpentine peninsular, as well as on the whole of its western side. But this needed settled weather, and a month must pass before this exploration could be profitably undertaken.

They therefore waited with some impatience, when an incident occurred which increased the desire the settlers had to visit the whole of their domain.

It was the 24th of October. On this day, Pencroft had gone to visit his traps, which he always kept properly baited. In one of them he found three animals which

would be very welcome for the larder. They were a female peccary and her two young ones.

Pencroft then returned to Granite House, enchanted with his capture, and as usual, he made a great show of his game.

"Come, we shall have a grand feast, captain!" he exclaimed. "And you too, Mr. Spilett, you will eat some!"

"I shall be very happy," replied the reporter; "but what is it that I am going to eat?"

"Sucking-pig."

"Oh indeed, sucking-pig, Pencroft? To hear you, I thought that you were bringing back a young partridge stuffed with truffles!"

"What?" cried Pencroft. "Do you mean to say that you turn up your nose at sucking-pig?"

"No," replied Gideon Spilett, without showing any enthusiasm; "provided one doesn't eat too much—"

"That's right, that's right," returned the sailor, who was not pleased whenever he heard his chase made light of. "You like to make objections. Seven months ago, when we landed on the island, you would have been only too glad to have met with such game!"

"Well, well," replied the reporter, "man is never perfect, nor contented."

"Now," said Pencroft, "I hope that Neb will distinguish himself. Look here! These two little peccaries are not more than three months old! They will be as tender as quails! Come along, Neb, come! I will look after the cooking myself."

And the sailor, followed by Neb, entered the kitchen, where they were soon absorbed in their culinary labours.

They were allowed to do it in their own way. Neb, therefore, prepared a magnificent repast—the two little peccaries, kangaroo soup, a smoked ham, stone-pine almonds, Oswego tea; in fact, all the best that they had, but amongst all the dishes figured in the first rank the savoury peccaries.

At five o'clock dinner was served in the dining-room of Granite House. The kangaroo soup was smoking on the table. They found it excellent.

To the soup succeeded the peccaries, which Pencroft insisted on carving himself, and of which he served out monstrous portions to each of the guests.

These sucking-pigs were really delicious, and Pencroft was devouring his share with great gusto, when all at once a cry and an oath escaped him.

"What's the matter?" asked Cyrus Harding.

"The matter? the matter is that I have just broken a tooth!" replied the sailor.

“What, are there pebbles in your peccaries?” said Gideon Spilett.

“I suppose so,” replied Pencroft, drawing from his lips the object which had cost him a grinder!—

It was not a pebble—it was a leaden bullet.



END OF THE FIRST PART.

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